University of Maryland Theses

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[1] Legal size pages folded in half, bound on top margin. Stained. Illegible in original. Bound out of order.
[2] Could be Alpin, Charles 1879 (Cordell).

HSHSL 2012 for the UM Digital Archive. Sources consulted for corrections: Original Dissertation; University of Maryland Medical Faculty, Matriculation List, 1851-1892; Cordell, Eugene F. "University of Maryland, 1807-1907" (New York : The Lewis Publishing Company, 1907), Volume 2.

UNIVERSITY OF MARYLAND

THESES

1879 (b)

Gregg, C. K.	The Physiological Action of Mercury	25p.
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Carter, H. R. Jr.	The Salivary Secretion	20p.
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A Thesis

on

The Physiological Action of Mercury.

respectfully submitted to the

Provost, Regents and Faculty of Physic

of the

University of Maryland.

for the

Degree of Doctor of Medicine.

by

Cornelius K. Gregg.

of

Texas.

Anno Domini

1879

WMb
1879

Physiological Action of Mercury.

This interesting and valuable metal was discovered many centuries ago, but was greatly feared by the ancients, who only looked upon it as a powerful poison and for that reason mercury was for a long time useless as a medicine. It was obtained in Spain by the Greeks in the year 700 B.C. who however did not dare to use it. The Arabian physicians were the first who ventured upon its use therapeutically, which they did about [illegible]. From that date to its introduction into England as a medicinal article, (which was during the reign of Charles I) it had a great deal to contend against, so many having been seriously injured by its injudicious use, that professional men were prone to consider well before using such a disastrous medicine as they then considered it; having once been introduced into England, it began to gain favor until at present it

impurities met with in the Pharmacopoeia.
The chief supplies of Mercury were formerly gotten from Idria in Germany, Almaden in Spain, Peru, China and Siberia; but the ore having been discovered recently in California and Australia, the largest amount are now obtained from the two last mentioned places. The metal is commonly found existing in nature in combination with Sulphur as the native Sulphide or Cinnabar; it is obtained in the free state by heating the Sulphide in an iron retort with lime or scraps of iron, and conducting the vapors into a large chamber where the Mercury is condensed while the SO_2 is allowed to escape. The metal thus obtained is in a state of moderate purity, when purchased in small quantities it is sometimes found to be adulterated with tin or lead

which metals it dissolves to some extent without much loss of fluidity. Such adulteration may be detected by the film surface the mercury exhibits when shaken in a bottle containing air and by the globules when made to roll upon a table leaving a train or tail.

Mercury is the heaviest of all metals except Gold and Platinum, its at. wt. being 200 compared with Hydrogen as the standard. It is the only metal which is liquid at ordinary temperatures requiring a temp. of -40° before it will freeze; it will boil at a temp. of 662° F.

On account of its silver like liquid appearance Mercury has derived the name Hydrargyrum hence its chemical symbol Hg. Nitric acid dissolves Mercury either in a concentrated or dilute state [illegible] Mercury readily. Muriatic (HCl) only affects it [illegible]

act upon it when in a concentrated state. By its union with other metals mercury forms compounds which are termed Amalgams. It is a [illegible] in medicine and mercurial compounds. The preparations of mercury are very numerous, the principal ones are: the Oxides, chlorides, Blue Pill, mercury with chalk (Hydrarg. cum creta) Mercurial Ointment and the Iodides; the other preps. cyanide, sulphate etc are of little importance as they are seldom used.

Before entering upon the study of the action Physiological of a medicine, our first enquiry should be: what is meant by the term Physiological Action? This a question of some complexity and has been discussed by many able writers, and does not seem to be at the present time fully determined.

It is held by M. Dr. Hallopeau of Paris in his recent treatise entitled: "Du Mercure action physiologique et therapeutique" that the physiological action of a medicine is the action upon the living organism whether diseased or in a state of health. In giving this as a definition he does not discriminate between the physiological and therapeutical action, the latter being the action exerted upon the human body when diseased, the former I should think therefore would be the action of that medicine upon a healthy person. For Physiology treats of the functions of the tissues and organs of the body in a state of health. The physiological action of Mercury seems to me then to be its action upon the human body free from disease.

To exert its physiological action Mercury must first

be absorbed into the blood and then to be disseminated throughout the tissues and organs of the body. Through what channels does it gain access into the system? There are three in number viz: the Skin, Alimentary canal and respiratory tract. Mercury is applied to the skin either by friction or fumigation. it enters the alimentary canal in the form of pill, powder or solution; the respiratory passages take it up by inhalation. Before it can be absorbed and enter the blood mercury and its preparations must undergo certain chemical changes. Mercurial Ointment is the prep chiefly used for external application, mercury exists in the prep in a finely divided state and it either enters by its vapor being absorbed or coming in contact with the Oxygen of the atmosphere is converted into an oxide or it unites

with the alkaline salts of the sweat to form compounds capable of being absorbed. The changes which the preparations undergo in the Alimentary canal are rather more complex. If metallic Mercury is taken only a very minute quantity becomes oxydized and is absorbed the large bulk of that taken passing out unaffected, acting as a purgative however in its passage through the intestines. Mialhe a celebrated French chemist was of the opinion that all the preparations were converted by the alkaline chlorides into a certain amount of corrosive sublimate ($HgCl_2$), the amount of bichloride formed by each prep. being different, the bin-oxide in contact with alkaline chlorides being converted directly into the bi-chloride whereas the proto salts are first converted into [illegible]

proto-chloride and by a subsequent reaction a very great proportion of the albuminate is produced. This is why he says the bi-salts are all so much more powerful than the proto salts both corroborate the views of Mialhe. The theory of Mialhe has at the present time however very few adherents. Buchheim proved that the bi-chloride unites with albumen to form a compound which of being assimilated without the case. The albuminate of mercury Overbeck? is taken during digestion and when fasting is acted upon differently. If taken during the latter state, it is acted upon in the stomach either by the action [illegible] or muriatic acid, being converted in the first and last instances into the chloride and by lactic acid into a lactate; in the small

intestines it is converted by the alkaline carbonates into a double salt; in the large intestines (if it reach them without having been absorbed in the stomach or small intestines) the sulphuretted hydrogen generated then converts it into the sulphide of mercury. This latter action does not take place if Calomel is given to infants. If taken during digestion the Calomel is decomposed by the protein materials of the food and converted into metalic mercury and a soluble albuminate. The iodides undergo modifications analogous to that of the Chlorides. Blue pill containing mercury in a very minutely divided state seems to be converted by the Oxygen of the alimentary canal into an oxide which is readily absorbed. Calomel is the preparation chiefly.

used for inhalation and it seems to exert its influence if taken by this method, through its solubility with mucus secretion of the air passages. After entering the blood mercury if very small amounts are taken seems to have the power of increasing the number of red globules and thus exerting a tonic influence on the system at large; but should the amount which enters the blood be excessive it decomposes and disintegrates that fluid, the amount of water is increased which makes it more prone to putrefaction. The fibrin albumen and red globules are diminished in quantities and hence it coagulates with difficulty, when coagulated, it is cupped and buffed but it is the buffy coat of anaemia & not of inflammation, the clot appears to be softer and is easily broken down. Through the medium of the

blood mercury enters various tissues and organs of the body, having a greater affinity for some than others. The changes which these tissues and organs undergo after mercury has entered them I will speak of later, stating first the various modes by which Mercury gains its exit from the system. It is eliminated chiefly by the kidneys but also by the saliva, milk, perspiration and faeces. That mercury is eliminated with saliva has been continuously demonstrated; its existence with saliva has given rise to some discussion may add here to the view that mercurial stomatitis was not due to mercury entering the buccal cavity from the salivary tract but by means of the epithelium lining that cavity. Mercury has however been found

in Steno's duct which is sufficient proof that of its being partly eliminated by the salivary glands. Its existence in the milk has been proved by the fact that children laboring under hereditary syphilis and only taking the mother's milk for nourishment have had the disease eradicated by the mother undergoing a mercurial treatment. Globules of metalic mercury have been seen upon the surface of the body of those eating it which alone demonstrates its partial elimination by the perspiration. Facts are not necessary to prove its presence in the urine and faeces, as various experiments have demonstrated its elimination in this way. A single dose of mercury is generally eliminated in 24 hrs and if it is given for a certain length of time, some is eliminated

and that which is not so disposed of remains in the system, that is to say it accumulates.

After the accumulation of Mercury in the system, it gives rise to a constitutional affection, Salivation, mercurialism or ptyalism as it is called, of which there are three varieties viz. slight mercurialism, acute intense and chronic intense salivation. The first or slight ptyalism requires only a brief space; the chief indications of it being: a slight redness of the buccal cavity, swelling of the gums and metalic taste this shows that mercury is beginning to have its constitutional effect and if it be suspended as soon as the above symptoms have manifested themselves, and the proper elimination be given, nothing of a deleterious nature will result. I shall now consider intense mercurialism of an

acute character. The irritation of salivation par excellence says a celebrated author on this subject "are friction, fumigation and excessive doses of Calomel internally" and he holds moreover that Calomel and mercurial ointment have a more electric action on the buccal mucous membrane than any of the other preparations of mercury. The Effect of this may be attributed to the fact that very large doses of Calomel and mercurial ointment may be given in conjunction with the Bi Chloride and bi-iodide the latter being such powerful escharotic poisons that they can only be given in very small doses. Marked idiosyncracies have been noted in some persons as to the effect that Mercury will have upon them, the sad case of M. Bouchard was

cited as an illustration of this fact, as he was fatally injured after making four applications of mercurial ointment. An instance is recorded where life was almost extinguished by a single application of the ointment during an attack of puerperal peritonitis. Some on the contrary can stand enormous doses of mercury, without any marked effect being produced. A syphilitic used the ointment for several months without any signs of salivation, who years before produced stomatitis by a single inunction of the ointment for the cure of [illegible]. Thus we see that the constitutional [illegible]-isposition varies not only with different individuals but with the same person at various periods. Men as a general rule are more susceptible than women to the

prominent influence of Mercury. The presence of teeth is almost indispensable in the develo-pment of Stomatitis, for at Almaden and Idria infants and old persons are seldom if ever attacked; on the contrary carious teeth, cutting of the wisdom, cold, fatigue and an irritable stomach are predispos-ing causes. Stomatitis is among the most startling of the symptoms of ptyalism: it generally makes its appearance behind the second molar tooth of the upper jaw, the gums then begin to swell becoming hot painful and red, manifesting all the characters of an acute intense inf-ammation. the breath has a fetid odor (mercurial breath), a sense of dryness in the mouth is complained of, metallic taste being also experienced, the teeth feel

uncertain about their position, the tongue lips and cheek become tumefied. These symptoms are aggravated if the drug continue to be given. Among the other disorders of the digestive tract are: dyspepsia, pain in the epigastrium, vomiting and diarrhoea. Its action on the liver has given rise to marked diversities of opinion: four theories are at present recognized as to the cholagogue action of mercury: 1st It augments the biliary flow by removing an intestinal obstruction. 2nd Produces a hypersecretion of the bile by removing morbid conditions of the liver which embarrass its secretion. 3rd Increases the formation of bile by an indirect action on the liver. 4th Increases it by a direct. There is a large class which deny the cholagogue

action of mercury in toto. That mercury does exert a cholagogue action clinical facts demonstrate but they ignore how it acts. The action of mercury upon the skin in acute intense salivation has given rise to some discussion as this denied by some that the eruption discovered upon subjects laboring under the class of mercurialism have a special character but they are wrong as it has been proved conclusively that a skilled dermatologist can always detect the eruption produced by an excess of mercury in the system. The cause of the eruption seems to be, that as the mercury is being eliminated through the pores of the skin, it comes in contact with the salts of the perspiration and

produces an irritating compound; the character of the eruption varies in intensity being first mild and gradually assuming a malignant type; fever is generally a concomitant of the eruption. Our next enquiry is what effect has the form of mercurialism under consideration upon the Kidneys? Albuminuria with or without haematuria is a symptom that the Kidneys have become affected at other times or later on the Kidneys are so changed that suppression of urine occurs (that is to say the urine fails to be secreted) and hence the urea being retained in the blood gives rise to uraemic poisoning one of the most fatal of results.

Having entered somewhat into the

symptoms and results of acute intense salivation, I now propose to take up the chronic form; generally produced by introducing into the system very minute quantities of mercury for a great length of time, the disease then comes on slowly and gradually. The initial symptoms of of chronic salivation are: feebleness and languor, the patient look pale and emaciated, they complain of violent pains in the head, a buzzing in the ears and vague pains in the limbs and joints. One of the most remarkable of the symptomatic phenomena is an exaltation of the psychological sensibility, the patients become troubled within speech they become morose and irritable anorexia exists they cannot sleep and suffer from nervousness.

The initial symptoms are therefore referable to the nervous system – which are very different from those which result later on. Its action on the digestive organs in the chronic is first to produce stomatitis which differs from that of the acute. The breath is less fetid, saliva not so abundant and the pain is of a milder character; the teeth blacken and fall out slowly and as a distinguished writer has said, "the greater the number of teeth the more the evil in the mouth;" the inflammation then (of the fauces usually extends) in the chronic type, it extends into the pharynx and even into the Eustachian tubes, the stomach also takes on chronic inflammation giving rise to chronic trouble. Its deleterious action on the nervous system

is one of the most marked of the results of chronic mercurialism. Nervous trembling is observed such as that produced by lead and alcohol, few of the workmen employing mercury fail to be affected in this way, this trembling may be confined to certain parts or extend throughout the whole body, the patient may not be able to write his arm being affected, or he cannot walk his legs being affected. How to account for the effects of mercury has not been satisfactorily explained, the metal it is true has been found with brain, but as to the mode by which its effects in nervous system are produced has not been demonstrated. The nervous trembling alluded to is the beginning of more severe troubles

the muscles especially the flexors are violently contracted, in some instances Locomotor Ataxia is produced which is characterized by diminution of sensibility with loss of motor power over various muscles. Hemiplegia is sometimes a result other serious troubles are Epilepsy and Apoplexy. And again the patient's intellectual faculties may also be affected: he has strange hallucinations and the mind in some instances is so powerfully affected that insanity may ensue. Chronic mercurialism does not affect the skin to such a degree as the acute, the only marked effect which is produced being Alopecia or falling out of the hair. Upon the air passages its effects are due to mercury

Aphonia is sometimes produced owing to a paralysis of the muscles of the larynx, patients have a marked tendency to phthisis from a depressed state of the organism at large. Its action upon the kidneys has not been studied very closely and the only point in this respect worthy of note is that albumen is not found in the urine and there is not suppression as in the acute. Its action upon the female organs is variable producing in some women an augmentation of the menses in others a diminution. its power of producing abortions has been exemplified in pregnant women working in the mercury mines. The general nutrition in chronic salivation there is depraved and broken down, the patient has a

careworn Expression and suffers Extremely
until finally the patient succumbs to
the Mercurial Marasmus.

Mus

The Urine

Its Chemistry & Pathology

an

inaugural Thesis presented to

The Provost, Dean & Faculty of Physic

of the

University of Maryland,

for the Degree of

Doctor of Medicine

by

Emanuel Wm Gilan.

— 1879 —

The urine in man approaches in character, and constituents to that of the Carnivora. When fresh it is clear, of a light amber color of an acid reaction which according to Liebig is due to the presence of acid Phosphates, according to Lehman however, the acidity is due to free hippuric acid and a trace of Lactic acid. It has a bitter saline taste and a peculiar odor which Staedeler affirms is due to Carbolic acid. The specific gravity varies according to the nutrition age, sex &c of the individual from 1.000 to 1.025. These various physical properties are of some diagnostic value. The normal color can vary from the light amber color mentioned above to a reddish or brownish yellow. Six classes or groups

of color have been observed:
I Pale. Colorless or straw color
II Normal. Golden yellow or amber yellow
III Reddish yellow or red of high sp. gr.
IV Dark. Brownish from color of dark beer to black
V Green and VI Blue.
The conclusions to be drawn from pathological urine showing these different colors are that the urine of the first class does not indicate any acute maladies. It occurs frequently in convalescence and in chronic diseases as anaemia, chlorosis, diabetes and it has been asserted that by its long continuance the type or grade of anaemia could be shown. It contains little coloring matter, small amount of urea and as a rule but few fixed constituents excepting of course when it occurs Diabetes Mellitus. In hewich this

tensity of urine, occurs after the free im-
bibition of beer or water (Urina Potus.)
Normally colored urine generally shows
the absence of disease. The urine of the
third class shows by its color and
high sp. gr. that it is highly concentrated,
rich in solid constituents and urea.
Its reaction is mostly acid. It can
occur normally after having partaken
of rich food, but in disease is of
importance in so far as it occurs
with the continued fevers. In these
it is often of greater value than the
pulse or temperature. Dark urine
points mostly to an abnormal pigment
which the urine has dissolved, or included
within it, such as bilirubin, blood,
urobilin. It is often highly colored

without specifying disease, the color in such cases being referable to substances as Rhubarb Senna Carbolic acid &c. Green urine of a dirty appearance occurs in Icterus through absorption of Biliverdine and is of the same significance as brown icterous urine. Dirty blue urine shows a blue sediment, it has an alkaline reaction and is said to be concommitant upon Cholera and Typhus. The odor of the urine is of very little importance and is supposed to arise from Carbonic and Damalic acids. The odor of healthy urine is subject to as many fluctuations as the color and can be most readily affected by ingesting Saffron, Cubebs, Asparagus &c. After the alkaline reaction has set in a disagreeable odor occurs. Heller has observed a peculiar putrescent odor occurring without

Typhoid and affections of the spinal cord which indicate the presence or formation of germs probably the cause of infection in these diseases.

The sp. gr. of normal urine is influenced by the amount of urea and Chloride Sodium, and it can be used to determine the amount of normal constituents. For this purpose the sp. gr. is ascertained and the last two decimals multiplied by 2 (Trapp) or 2.33 (Neubauer). Sugar and albumen mostly influence the sp. gr. of a pathological urine and a high sp. gr. of pale urine especially indicates albumen or sugar. As a rule the sp. gr. is increased in acute inflammations, Diabetes Mellitus and is decreased in chronic diseases with Dropsy and Renal affections.

Normal urine after boiling remains clear if it be decomposed by strong acids it gives rise to a peculiar disagreeable odor and at the same time the color changes more or less dark. There is no cloudiness immediately after Ebullition but upon standing Uric acid crystallizes upon the sides & bottom of the vessel.

The normal constituents of urine are Water constituting the greatest portion by weight, urea, uric acid, hippuric acid, creatine, creatinine, xanthin, pigments, Indican, mucus, chlorides, Phosphates and Sulphates of Potassium, Sodium, Ammonium, Calcium and Magnesium with occasional trace of Iron, Nitrates, Silicates, Carbonic acid & Nitrogen. Alkalies precipitate the Earthy Phosphates

Chloride of Barium precipitates Sulphates in urine previously acidulated with Hydrochloric Acid. Nitrate Silver precip. Chloride Silver if the urine be previously acidulated with Nitric acid, if this be not added the Nitrate will precipitate the Phosphates. Phosphoric acid is precipitated from urine by the addition of Chloride of Iron if the urine be acidulated with Acetic acid or Acetate Sodium. Acetate Lead precipitates Chlorides, Phosphates & Sulphate Lead Oxalic acid precipitates oxalate Calcium as does also oxalate ammonium. Nitrate of Mercury will after the removal of the Sulphates and Phosphate cause at first a cloudiness afterwards disappearing resulting from the decomposition of the Nitrate and the Chloride of Sodium [illegible]

$HgONO_5 + NaCl = HgCl + NaONO_5$
this is succeeded by a permanent white precipitate caused by the combination of the nitrate of Mercury in Excess with the urea. Alcohol causes a turbidness which however disappears upon dilution with water. Normal urine is acid, but can however in consequence of the administration of carbonates or the organic salts of the alkalies be rendered alkaline. A strongly acid urine is of importance in indicating certain sediments or concretions and inflammations of the kidneys or ureters. The degree of acidity increases in Rheumatism, Pneumonia and Pleurisy. The alkaline reaction is of great importance. It may be due to Carbonate of Potassium it shows the

presence of a severe inflammation of the brain, if due to Ammonium Carbonate it indicates Uraemia, the urine in this case often being brown from its admixture with Haematine. or it may be present in the urine from the existence of a chronic catarrh, and in this case the urine is mostly cloudy from mucus & pus.
Upon standing urine undergoes two fermentative processes. The first or acid is due according to Scherer to the decomposition of the mucus corpuscles of the bladder. In these corpuscles, there exists a ferm similar to the yeast ferm which by catalysis decomposes the urinary pigments, the color in consequence becoming more Lactic and Acetic acids are formed and there usually occurs in addition

delicate red colored sediments, mixtures of uric acid, urates and mucus. The acid fermentation appears therefore to be in intimate relation with the existence or formation of sediments and calculi.
The alkaline depends upon the temperature cleanliness in the utensils, and is owing to these circumstances that the process will take a longer or shorter time. The acid fermentation need not necessarily precede, under certain not so clearly understood conditions the urine undergoes the alkaline fermentation in the bladder. This is also induced by the mucus corpuscles of the bladder, as this has been observed mostly in affections of the epithelium of that viscus. In the alkaline urea is decomposed into

Carbonate of Ammonia and free Ammonia

$C_2H_4N_2O_2 + 4HO = NH_4OHCO_2 + NH_3 + CO_2$

In consequence of this its odor is ammoniacal and it effervesces with acids.

The free ammonia unites with Phosphate of Magnesia and Calcium to form the triple Phosphate. This urine decomposed with alkalies ammonia is freely generated.

The relation of the fixed principles to the amount of water is not constant, as indicated by the sp. gr. It varies from 12 to 60 grammes per thousand. The amount of the fixed constituent are ascertained by evaporating a weighed quantity of urine on the water bath and drying the residue at a temperature of 100°F. This

method is liable to error from the fact that during the drying, the acid Phosphate of Soda decomposes the urea, to correct this an apparatus is necessary to collect and estimate the amount of ammonia. In practice however it is not necessary to be so minute as the amount of urea can be closely approximated from the sp. g. The non volatile salts are calculated in this manner: A measured amount of urine is evaporated to dryness and heated to redness until the carbon is consumed. In the process there are also several causes of error. The temperature should not be too high so as to decompose the chlorides and that the charcoal do not [illegible]

the sulphuric and phosphoric salts
For this purpose it is better to dissolve
these salts in boiling water just
previous to the full incineration and
subsequently heat the charcoal alone.
Evaporate the solution to dryness
and heat the whole to a moderate
degree of redness in a covered platinum
Crucible. The amount in normal urine
of urea present differs very much
and depends upon nutrition as well
as weight of the individual. On a
mixed diet it amounts to 2.5 or
3.2 pr. ct. Urea is augmented in
all inflammatory diseases mostly
in acute cerebral affections and
Rheumatism and in dropsy when
diuretics are employed. This

decreased in the Neuroses, chronic diseases in which the change of material underlies spinal and renal affections. In typhus it is first increased but rapidly decreased whilst in Meningitis it rises and remains permanently so. A small quantity of urine about 20 to 30 grammes is Evaporated upon a water bath to the consistence of syrup shaken with alcohol filtered and alcohol evaporated. Urea more or less colored remains behind. If it be dissolved in a small quantity of water, and the solution decomposed with oxalic or nitric acid urea crystallizes upon sides and bottom of the Vessel in white rhombic or hexagonal tables. If a small quantity

of urea be present the crystals can be observed under the microscope. To determine the amount of urea various methods are at our disposal but the one from which we adduce the best results is that devised by Liebig, it has also the advantage of taking a shorter time. Add to dilute solution of urea a like amount of dilute solution of Nitrate Mercury and gradually neutralize the free acid with Carbonate of ~~Ammon~~ Soda, a copious flocculent precipitate ensues. If this process is continued alternately with the addition of Nit. Mercury and Carbon Soda a permanently yellow color of mercuric hydrate or basic Nit Mercury

will ensue. If ~~then~~ at this point the liquid does not contain any more urea as this is in combination with the nitrate, since one Equivalent of Mercurous oxide combines with one of urea. In order to calculate the amount at the same time we use a prepared & estimated solution of Mercurous oxide of which 1 CC will indicate 10 Milgram. of urea Before proceeding to estimate the urea it is necessary to precipitate the sulphates & Phosphates by a mixture of one part of cold saturated solution of Nit. Barium and 2 parts cold Baryta water. The test solution of Mercurous oxide is prepared: 96.855 Grams of pure corrosive sublimate are precipitated by Liq Soda, washed and precipitate dried

Of this precipitate 77. 2 grammes are dissolved in the smallest possible quantity of nitric acid, Evaporated to consistence of syrup and brought to measure 1 Litre with water. A given amount of urine is carefully measured in a graduated Pipette, Pour this into a beaker and add half the volume of the Baryta solution, filter and measure off 15 C.C, these 15 CC indicate 10 CC of the original ~~solut~~ urine. Fill a Moore's Pipette with the nitrate of Mercury solution to 0 and allow this to flow into the urine until a precipitate ceases to fall. Draw off a drop or two of this mixture upon a watch crystal and add one drop of Liq. Soda If this remains clear add somewhat

more of the Mercury solution and test again, continue in this manner until after the addition of 1/2 drop a visible yellow coloring ensues. The number of CC of mercury solution multiplied by 10 will give the number of milligrams of urea. There are in this method several causes for Error, the above test is given only for a urine containing not less than 2% of urea. Should this contain more than this amount, a smaller quantity of the Sol. of Mercury is used and it is advisable to dilute the solution approximately and repeat the test. If the urine contain less than 1% a greater amount of the Mercury Solution is necessary. In this case it is necessary to subtract for Every 5 CC mercury sol employed and 3 CC.

1 C.C. from the amount total of Mercury Solution. Another source of Error lies in the Chloride of Sodium and it becomes necessary to remove it with Nitrate Silver. If the Chloride amounts to only 1 or 1½ % in order to retain the urea in solution subtract only 2 C.C. from the number of Cubic Centimeters of the Mercury Nitrate. If the urine contain Albumen remove this by coagulation. If Carbonate Ammonia decompose it with Baryta water and Evaporate the Ammonia. If it be required to estimate the latter originated from the urea, titrate the urine with Sulphuric Acid and Estimate the amount of Sulphate of Ammonia.

Uric acid occurs partly free partly in union with bases and its amount varies from 0.2 gram to 1 gram in the 24

hours. It is increased in derangements of digestive apparatus, in most of the symptomatic fevers, as in diseases of organs of respiration and circulation. Its decrease is proportionate to that of urea and like it can be converted into Carbonate of Ammonia by the same means.

To determine the presence of uric acid from 100 to 200 Grammes of urine are Evaporated (Albumen if present having been previously Coagulated) to a syrupy consistence, the urea and Extractive matter removed with Alcohol, uric acid remains behind in presence with mucus and salts. One part of this is saturated with Nitric acid & heated the precipitate is thereby dissolved. Evaporate on the water bath and a reddish residue remains which moistened with Ammonia

(an excess being carefully avoided) shows the purplish red color of Murexide turning into a bluish purple when a drop of Caustic Potash is added. The other portion is dissolved in Liq. Potassa and an excess of Hydrochloric acid added, set aside, at the End of an hour uric acid will appear in microscopical Crystals. To estimate uric acid precipitate about 2 00 - 300 ~~grammes~~ C.C. with 2-3 grammes of Muriatic Acid and allow it to stand in the lowest possible temperature for 24 hours The weighed Crystalline mass is collected upon a previously dried and weighed filter well washed with water dried and weighed. Schunk has proven the existence of oxalic acid ($C_2H_2O_4$) united with Ammonia in normal urine which is a

a white acid and very slightly soluble crystalline powder, but which in combination with Ammonia is a soluble salt. If uric acid is dissolved in very dilute warm Nitric Acid, decomposing immediately when cold with Ammonia and crystalizing the solution by Evaporation, oxalate of Ammonia crystals are discovered. From a concentrated solution of this each Hydrochloric acid will disengage oxalic acid as a white powder. If a drop of the solution of pure oxalate Ammonia be brought under the microscope and Evaporated long prisms of the salt which are pointed at the Ends will be seen. They unite to form beautiful double plates or rosettes. If the salt be altogether pure, the plate will remain small and form bucket shaped masses which at the periphery are seen to be fine

crystalline needles. If to this mass a drop of Nitric Acid be added, the crystals will change into decidedly worthy appearing masses of oxalic Acid.

The chlorides appear mostly as Chloride of Sodium, In the mean they amount to about 15 Grammes in the 24 hours, They can however be increased in a healthy vigorous individual on active exertion. Their decrease is of special diagnostic importance and has been observed in all in which no chlorides were absorbed as in Cholera, acute types of Typhoids, Inanition, in devitalized pathological processes, in abnormal transudations acute exudations as Pneumonia, Pleuritis Peritonitis, Pericarditis Endocarditis Meningitis Typhoid Fever, acute Tuberculosis &c. In diminution of chlorides is characteristic when Pneumonia

succeeds Rheumatism. Their disappearance is so sudden that on the presence of the test used at a few hours interval, a decided alteration in the course of the disease will have been noticed. Qualitatively the presence of Chloride of Sodium is shown by acidulating urine with Nitric Acid, and precipitating by Nitrate of Silver, quantitatively, Liebig's test is the best We have already seen that Chloride of Sodium will split up in presence of Nitrate of Mercury into Corrosive Sublimate and Nitrate Soda, As long as the Chloride is present there is no precipitate of urea, but one drop above the point of saturation however will reveal a white cloud. As one Equivalent of Mercury requires one Equivalent of Chlorine, the solution of Nitrate is prepared in such a manner that one cubic Centimetre may equal 10 Milligrammes of

of Chloride of Sodium. For the success of the
test the Phosphates must be previously
removed as in the manner of determining
the amount of urea, A mixture of urine and
Baryta water is prepared as in the test
for urea which has a neutral or slightly acid
reaction and Nitrate Mercury is added. At
the first addition of the Mercury a cloudiness
appears which however disappears upon
agitation. By reading off the amount of
Nitrate Mercury used, multiplying by 10 the
result will give the amount of chloride of
Sodium present in 10 C.C. urine.
Phosphoric Acid appears as acid Phosphate
Sodium and as double Phosphates Lime &
Magnesia. Alkaline Phosphates are
present in inflammatory processes
particularly in acute Pneumonia and
Apical Disease, lessened or absent in

in the nervous, chronic spinal & renal affections, Earthy Phosphates are increased in Meningitis, especially in acute cerebral affections, in Rheumatism, diminished in renal lesions, spinal complaints and especially in Neuralgia.

If Ammonia be added to urine in excess Phosphates of ~~Ammon~~ Magnesium & Calcium are precipitated; The remaining Phosphates if any are precipitated by neutralizing the Ammonia with Acetic Acid adding Chloride of Iron which causes a yellowish white precipitate of Phosphate Iron.

The quantitative estimation of the Phosphates rests upon the fact that the Phosphate of Uranium is insoluble in acetic Acid the minutest excess of the uranium salt produces a brownish red color with Ferrocyanide of Potassium.

Under certain conditions disturbing the balance between health & disease substances appear in the urine which in consequence of the altered condition of transudation are excreted by the kidneys or of late those substances presenting themselves normaly in the blood in consequence of the Metamorphose of tissues or produced by the tissues themselves. Under normal conditions the blood decomposes these substances In alterations from health there by their continued ^ + increased amount or presence owing to the peculiar phenomena caused by the diseased condition decomposes the constituents of the blood either not being themselves destroyed or merely forming isomeric compounds ×

are eliminated from the kidneys.
The conditions under which albumen may appear in the urine are much more numerous than formerly supposed, when the presence of this substance was supposed to indicate one peculiar diseased condition. Albumen appears in: Constitutional diseases as Hydraemia Chlorosis, Anaemia, diseases of the heart and liver which by reason of the difference in pressure of the circulation, the albumen not being again absorbed by the tubuli uriniferi owing to the exfoliation of the mucous membrane lining these tubes ~~the al~~ appears in the urine In diseases of the uropoietic system, as Typhus, Peritonitis and Chemic inflammation producing hyperaemia of the kidney.

In idiopathic Renal lesions as in Bright's disease, and Nephritis. In Haematuria which may be ~~caused~~ a hemorrhagic Capillary Haematuria in which no coagula of fibrin appear, a hemorrhagic vascular Haematuria, in which a blood corpuscle is found and a serous haematuria in which no blood Corpuscle is found but haematin is present as well as the albumen, if this appear in urine having a sp. gr. of more than 1.020 it is a symptom of Uraemia. Under 1.020 a corpuscle is fewer but can be shown in a red colored albuminous urine by washing the cell. If however the sp. gr. is above 1.020, the presence of the haematine can only be explained by Carbonate of Ammonia, a symptom of uraemia, dissolving out the haematine.

albumen is often present in Pyuria. The acid pyuria is found in Pyelitis, Catarrh of Ureters, Nephritis &c. Alkaline pyuria indicates a vesical Catarrh which may be conjoined with the renal affection or may appear alone. When albumen which is secreted with pus in inflammations of the kidney, equals or exceeds in amount the albumen which appears in intercurrent capillary or vascular haematuria, this condition indicates what is known as Haematopyuria. Besides these various Conditions albumen is found in many fevers, remittent & intermittent also in the Exanthemata, in Pneumonia, Emphysema Tuberculosis, after excess in eating or drinking and after the inhalation of Arsenuretted Hydrogen.

Sugar, has been announced by various authorities to be a normal constituent of the urine, which however is not universally accepted. Sugar appears as a permanent constituent only in one disease viz. Mellitus. An enormous amount of urine is daily excreted in this disease Even as much as 50 pounds containing large amounts of sugar. The urine has a sweetish taste and the clothing moistened with it, appear sticky as if covered with honey. The appearance of sugar in the urine is also a sequel of an injury to the floor of the fourth ventricle or irritation of the Pneumogastric. Sugar has also been found after a sudden suppression of the lacteal secretion, more often in Diabetes and in Cholera.

Thesis presented by

Charles C. Shippen.

February 17, 1879.

A brief review of the present aspect of Medical Science.

"Nisi vero, nil verum".

In selecting a subject for a medical essay to present for your consideration, in conformity with one of the requirements of graduation from the University of Maryland, I have been led to choose the above for two reasons. The first, because it is unreasonable to suppose that at this early day I should have accumulated sufficient knowledge & experience in matters appertaining to the clinical history of any particular

disease in the nosological calendar as to be able to give expression to any thing original connected with it. The second, because in the course of my lay & medical reading I have been struck with the many changes in the public mind in regard to the subject of medical science and also with the revolution that recent advances in the cognate sciences had made in the strictly medical mind. It is not without great diffidence that I enter upon such an undertaking, as the subject is one which requires handling by abler & deeper thinkers than myself, and I would therefore

ask your indulgence for any imperfections that more critical eyes may discover.

In instituting a comparison between the past and present merits of Medical Science, it might appear more fair to the memory of the past to pass in review the history of medicine from its earliest start up to the present moment. This would necessarily entail much time, much research. I shall confine myself therefore to the events of the past few years.

A very distinguished professor, Sir Wm. Hamilton who died a few years ago, is credited with having asked

the question (when reviewing the medical writings of Dr. Cullen) "Has Medicine advanced one step since the days of Hippocrates?" and, in vindication of his own belief in the negative conclusion, referred to the recorded opinions of several eminent authorities of modern times. The question so put no thoughtful mind is disposed to evade. Sir William fortunately was a professor of logic and not of medicine and the philippic which he hurls at medical science is partly to be accounted for by the fact that he exacted more general culture and classical attainments than adorned the medical profession

at that day. It is with the educated ignorance of just such men on the one hand, and uneducated ignorance on the other that the science of medicine has had to struggle for her very existence. As late as the latter part of the eighteenth century Hoffman wrote: "Fuge medicos, &c., si vis esse salvus." It is scarcely necessary to unearth the buried heaps of abuse that have beset the path of medicine. Under the circumstances the slow progress she has made is not to be wondered at. No one can deny that the science of medicine has not kept pace with her sister sciences, and the question is

pertinent as to the reason. The truth is that it is only within a few years that medicine has been lifted at all to the dignity of a science and found her proper niche. Let us enquire what constitutes medical science and we shall be better understood.

It is a multiple, so to speak, of many other sciences; the embodiment of almost every other science. The science of Anatomy, Physiology, of inorganic and organic Chemistry, the Study of Botany, the science of Physics, & I might add nearly every other known science, all contribute to make the structure perfect & complete.

Some have been disposed to rob medicine of her scientific character and to place her on the list of the arts. The learned Broussais held to this doctrine, and even the great Rousseau was wont to say: "I have an instinctive aversion to medical philosophies. I infinitely prefer to observe facts in all their details, to assemble & group them together and then to deduce from them some simple theory or practical inference". Certainly neither of these great men of their day could have attained the eminence they did, and maintained their position in the ranks of their profession, had they not been

men of eminently scientific attainments. Their very scientific natures made the art a logical sequence.

I hardly think any one will deny the fact that there have been at various times many natural observers who have done the science of medicine a good turn without being guided by the light of scientific knowledge. But the thoughtful cannot but agree with me when I advance the broad proposition that to rightly apply the art, the hand must be guided by all the available means that the light of modern science brings to its aid. It is this difference now which is rapidly

dragging medicine from the deep sloughs of empiricism. As our text states, from truth nothing but truth can be adduced. The medical enquirer is now no longer satisfied with the meagre explanation that it is so because it is so, but is prompted by the means at his hand to read facts in the light of scientific and philosophical induction. "Poeta nascitur, non fit," may apply well enough to the bright lights within the domain of literature, but the popular phrase of being "born a doctor" must have something more substantial than mere popular belief.

Medicine, then being recognized

as a science embracing within its folds most of the other sciences, of which it is the simple expression, let us briefly present a short review of its present condition. The Keystone upon which rests the whole superstructure of medical study and investigation — Anatomy - stands now as it has done for nearly two centuries, a monument of man's research and labor. It is only within the past half century that the application of the microscope has inaugurated a new era in this branch of enquiry. Histological Anatomy is daily revealing some new link in the general chain of facts that

contribute to the better appreciation of Nature's laws. With our increased acquaintance with the minute structure of the body, the sister sciences of anatomy, viz, Physiology, Biology and Chemistry, awaken a new interest, and open new channels of investigation and research. If disease is the antithesis of health the first cannot be rightly or approximately studied unless the latter is understood. Physiological investigation based upon experimental enquiry into vital processes is rapidly unearthing truths and facts from the great human laboratory that ripen into golden fruit in the appreciative Eye of the clinical observer.

The science of Biology, the study of the natural laws of production and reproduction, though yet in its infancy, will, we predict, at some future day contribute vastly to the better understanding the normal and regular laws of Nature. It is a vast mystery, it is true, but the only true path that leads to the study of the laws of heredity.

The history of the Institutes and Principles of medical science embraces at the present day a knowledge of every department of pathological enquiry that can possibly contribute to the elucidation of medical facts. While the Principles of medicine require

the aid of Pathology for the interpretation of every departure from the laws of health, who can deny the fact that this aid the past few years, under the improved systems of enquiry, have not more materially contributed to the proper interpretation of morbid phenomena than ever before. The weakest chapter in medical pathology, i.e. the Etiology of disease, is daily becoming stronger.

While this knowledge is inapplicable to those hidden sources of disease which defy every known effort of modern research, and which we call the "Zymotic materies morbi" for want of a better name, still, the causation of morbid action is now

regarded from a more philosophical standpoint than formerly. The refuge in the idea of "cold" contributing as an essential element in the causation of disease no longer satisfies the keen appetite of modern research. The pathological investigator asks for something more, and must know the why and the wherefore — what role the effect of cold or heat plays in the mechanism of disease. This is a step in the right direction, and a step to be taken only by those properly trained in scientific research. The clinical value of all such knowledge is daily becoming more obvious, not only in the art of medicine

but also that of surgery.

Whatever Science contributes to the beautifying of Natures natural laws as applied to the human family, Pathology does to the reversed order of things. The term "malaria" is now almost a household expression. It means something certainly, but its true and logical place is not yet determined. We have not quite yet reached that point where this unknown factor can be translated into its exact meaning, so for the present the term "malaria" is good enough. But, though we cannot analyse it and reduce it to its exact entity, certainly much that is known of

its power is checkmated by the investigations of modern sanitary science.

Since the day when Laennec gave to the medical world the fruits of his observations upon the application of the physical laws of sound to the elucidation of morbid conditions the diagnosis of those conditions has become a fixed law. With the progress which our knowledge of healthy vital processes has made our ability to recognize disease and to demonstrate its nature and to predict its result has more than kept pace. The diagnosis of disease rests now upon almost as fixed a foundation as the

laws that regulate the physical arrangement of the planets. Every element of knowledge and every possible factor is well weighed to ascertain what each can contribute to the forming a correct diagnosis and a proper etiological and pathological account of the clinical phenomena presented to the physician and surgeon.

The application of the laryngoscope — the application of the sphygmograph opened a new era in the history of medical diagnosis, each contributing material aid to the truthful interpretation of medical science.

As our knowledge based upon

scientific and logical deduction advances into the domain of the natural and unnatural aspects of medical investigation, as the laws of health and the factors of disease become better known certainly it is reasonable to conclude that the means for securing the one and for counteracting the other will be better understood. The science of therapeutics, the "ars medendi", which used to be regarded as the embodiment of medical science itself, is daily assuming a more compact and definite shape.

It has long been known that the tendency of most diseases is,

to use a common place expression, to get well unaided by art. But often natures work makes such extravagant demands upon the life of the individual as to defeat her kind and laudable efforts. In the discrimination of those conditions where art can aid nature as far as practical medicine gives its "ultima thule". The means seem immense, but only to the untutored eye. The vast Storehouses of the materia medica are rapidly disappearing and becoming a history of the past. The shocks inflicted upon poor helpless human nature by the Sangrados of the past years now

to be felt. The wholesale importation of drugs into the human organism has become a thing of tradition. And what has wrought this change? I answer, the light of modern medical research.

I have thus endeavored to draw a feeble picture of the present aspect of medical science, without entering into a descriptive history of the various elements that contribute at the present day to elevate her standing among her sister-sciences. The tendency of the age is to investigate thoroughly, and to measure the merits and value of new scientific knowledge by the

nearness with which it approaches truth. Medicine is not far behind in this scrutinizing race. Whilst her enquiries have been beset with difficulties, she has been able in a measure to surmount many of them. Many of the dogmas of the past are rapidly passing away, and error is being supplanted by truth.

When we consider that the physician's labors are with those vital processes which constitute life, and when we reflect how those processes are affected by the physical and moral relations of the individual, it would be unreasonable to claim for a science the ac-

quisition of that which is beyond the grasp of human intellect.

Sunt certi denique fines quos ultra citraque nequit consistere rectum."

But whilst we may not with the means that we have attain this Promethean knowledge, who can foretell what another half century may not witness. The present outlook of medical science presents, I think, a bright and seductive picture, even to the most skeptical. The foreground may still bear the impress of the dark and rugged shades of the past, but the perspective stands out in bright and brilliant coloring with most significant

precision. Who at the present day gives more than a passing thought to the Exploded theories of the fluidist and the solidist? Is there any one who yet clings to the mechanical idea of inflammation, save where the mechanical cause is apparent? I put these questions as they have suggested themselves to my own mind. There are many things in the science of Astronomy we can not yet explain, many things in the other sciences. The same may be said of medicine. But is it proper, or does it serve the ends of legitimate medicine for the sake of nothing better, to adhere to doctrine inconsistent with common sense?

The human body is one grand whole, regulated by laws just as well defined as any mathematical formula. The solid parts, in a physiological sense, and the fluids bear a reciprocal relation to each other, so that whatever interferes with the laws regulating the one will surely interfere with the healthy action of the other. The laws of normal nutrition, on the one hand, with the regular growth of tissue is as well defined in its relation to health, as the abnormal overnutrition is followed by disease. With the better understanding the effect of disease, a more intelligent appreciation of the cause, follows as a necessary corollary.

I do not know a better way of concluding this essay than by a quotation from a recent work of a very distinguished writer on theology, which reads thus: —

"Those who flinch from enquiry because they dread the possible conclusion; who turn aside from the path as soon as they catch a glimpse of an unwelcome goal; who hold their dearest hopes only on the tenure of a closed eye and a repudiating mind – will, sooner or later, have to encounter that inevitable hour when doubt will not be silenced, and enquiry can no longer be put by; when the spectres

of old misgivings which have been rudely repulsed, and of questionings which have been sent empty away, will return" to haunt, to startle, to waylay"; and will then find their faith crumbling away at the moment of greatest need, not because it is false, but because they, half wilfully, half fearfully, grounded it on false foundations".

— Acuta Peritonitis —

H. Irwin Clark

The peritōneum is a serous membrane that invests nearly all of the pelvic and abdominal viscera and like the lining membrane of other parts is subject to inflammation, which disease is termed Peritōnitis.—

Clinical history— Peritōnitis may be developed gradually, occupying two or three days, but generally it is sudden and the disease soon declared. Pain over the abdominal region is a marked symptom, usually beginning at some particular spot and then radiating. The pain is stinging and lancinating

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in Character. It is increased at times so as to resemble that of Spasm or Colic. Deep inspiration produces pain, therefore the respirations are usually shortened and increased in frequency, the breathing being Costal. Any movement of the body produces intense pain. Pain may be moderate or absent. Tenderness on pressure over the abdomen is marked, and usually present. The pain and tenderness are usually more intense at some particular spot, and they continue during the course of the disease. The pulse is apt to be

upon his back, with the lower extremities raised, so as to relieve the tension, and weight of the bed clothes. Tympanities generally present. Abdomen usually distended and tense, and this condition lasting during the entire course of the attack. Bowels usually constipated. Diarrhoea may occur secondarily, sometimes of critical first. Vomiting frequent and may be a prominent symptom. In the latter part of the course regurgitation is apt to take the place of Vomiting. Thirst is present. Pulse apt to become quite frequent, numbering 120 to

130 per minute, it is sometimes only moderately accelerated. It is usually small. Prostration great. Perspiration apt to be present. Weariness and anxiety is depicted on Countenance of patient. The upper lip may be elevated and drawn tightly over the teeth, when this is present this characteristic. Micturition difficult, due partly to paralysis of muscular tunic of the bladder and partly to loss of power over abdominal muscles, on account of the distention, and pain caused by the effort to micturate Causes the patient to post pone it as long

as possible. The Catheter may have to used. Delirium may occur towards the termination of a fatal attack. Pathology Inflammation attacking the peritoneum,- Causation. It chiefly occurs in puerperal women. As a spontaneous or idiopathic disease it is rarely met with. Exclusive of puerperal Causation, it is chiefly caused by perforation of the alimentary Canal. The Ileum is sometimes perforated in Typhoid fever thus Causing it. It may be caused by ulceration and perforation of the Vermiform appendix. The

Stomach may be perforated by gastric ulcer and give rise to the disease. Injections of irritating substances into the uterus may cause it. The disease may be produced traumatically. The affections called Bright's disease may cause Peritonitis. Exposure to cold may bring on attacks.

Diagnosis. It is generally not difficult in the majority of cases, as the symptoms are generally well marked. It is to be distinguished from acute enteritis, Colic, abdominal rheumatism and lumbo-abdominal Neuralgia. The dis-

tinguishing marks between
Enteritis and peritonitis are,
the pain greater, the pulse
quicker, there is more tender-
ness on pressure over the ab-
domen, more tympanites and
generally absence of diarrhoea
in peritonitis, and acute En-
teritis in the adult is less
frequent: Secondly, pain in
Colic not so continuous, tender-
ness on pressure is absent and
in Colic the pressure rather
relieves pain, prostration not
so great in fact is wanting
in Colic, also frequency of pulse
There may be some delay in
the development of these symptoms

and the diagnosis will have to be delayed a little. Thirdly, the rarity of abdominal rheumatism will exclude it to a certain extent. Movement of the body causes pain all over the abdomen in peritonitis, while in rheumatism the pain is restricted to certain muscles, and perhaps to one side of the abdomen. In rheumatism deep, firm pressure may be made, without augmenting pain. Fourthly, Lumbo-abdominal neuralgia may simulate peritonitis very much in certain cases. The pain is severe, position on the back, lower limbs flexed

Patients presenting these symptoms are apt to be females more or less hysterical. Frequency of pulse and prostration are wanting in these cases. The tenderness on pressure in the Neuropathic affection is more superficial, the patient shrinking from the slightest touch, but firm, prolonged pressure with open palm is well borne and may afford relief. Whereas in peritonitis the pain is always in proportion to amount of pressure. Muscular rigidity of peritonitis is wanting. The history will be the best guide in determining

the cause of the attack.

Prognosis. Acute general peritonitis is always a grave disease, involving more or less danger to life. Judiciously treated uncomplicated cases, the prospects for recovery are good. In complicated cases, including under this head cases in which the disease is connected with gastric or intestinal ulceration, Bright's disease &c, the prognosis must be unfavorable. In cases of perforation, the disease may run rapidly to a fatal issue, destroying

life Sometimes within a few hours. Recovery however is not impossible in Cases of perforation, provided the opening be not too large, and Closure be quickly affected by adhesions around it. The average duration in fatal Cases is from five to six days. Mode of death is by asthenia. Unfavorable Signs are denoted by progressive increase in frequency of pulse, great prostration, Coldness of extremities, hiccough, regurgitation &c &c. Improvement as regards these Symptoms refused, is favorable

with diminished rapidity of abdominal muscles and diminution of tympanites. Convalescence is slow. More or less tenderness and colic pains persisting during recovery. Treatment. Formerly the treatment depended very much on blood-letting and cathartics, both of which have been pretty much "laid on the shelf". Both of them are looked upon as doing more harm than good in this particular disease. By blood-letting we diminish the patients strength and the cathartics destroy

that perfect rest of the bowels which we should strive to maintain, Therefore Cathartics are not only devoid of good but productive of harm. The friction caused by the peristaltic movement of the intestines tends to perpetuate and intensify the disease and our great aim should be to keep these parts at perfect rest. If the patient should suffer from an accumulation of feces in the rectum, they may be removed by simple injections. To acquire this control over the bowels there

is nothing that can take the place of opium, which Professor Millenberger calls the "bonum Dei". To Prof. Clark, of New York, is due the credit of treating peritonitis exclusively with opium and he gave it in large, in certain cases, in enormous doses. But opium has been in use in the treatment of peritonitis for years in conjunction with mercury and blood-letting. Its action is to quiet the patient, keep the bowels at perfect rest and relieve pain, thus removing the most

important element of inflammation. It also assist in maintaining the continuity of the blood current and hinders the migration of the white corpuscles. Barthelow states a full dose of morphia given hypodermically at the out set of the attack, will in some cases cut it short. The treatment should begin with a full dose and its physical effect kept up, by regular use of smaller doses. Relief of pain is evidence of good effect of the opiate. Start with the dose gr ½ to gr ¼ of Morphia for an adult

or its equivalent of some other preparation of the drug. If required the opiate should be repeated at intervals of two or three hours, and in doses large enough to relieve pain. The narcotic effect should be carefully watched. The nurse should be minutely instructed to watch effect and if necessary to lengthen intervals between doses. Lastly the dose should be gradually diminished as the disease improves. The bladder should be attended to. Turpentine stupes applied over the abdomen are

Very good. Cold applications may do good. Sustaining measures should not be neglected. Tonics, alcoholic stimulants and alimentation are to be depended upon. Alcoholic stimulants judiciously given are of the greatest utility at times. The fore use of opium through the attack does not appear to condemn constipation, diarrhoea may even occur during its administration —.

Thesis
On
The Brain.
By
Andrew. J. Lemaster.
Of Beddington Berkley
County. Wpe. Va.
February
The 4th. 1879.

If it be desired to dissect the human head, with the view of examining the brain, the first thing of importance that is would come in contact with after passing through the soft parts, external and internal tables of the skull, would be the dura mater. This membrane forms the internal lining of the cranium or internal periosteum, which adheres very intimately on one side to the internal parts of the skull, and becomes continuous with the periosteum by passing out through the different foramina at the base of the skull, and also forms the sheaths for many nerves that pass out through these apertures.

At the margin of the foramen

magnum it becomes continuous with the dura mater of the spinal canal. The dura mater is composed externally of fibrous layer or lamella and internally of a serous layer, this being the case we might term it a fibro-serous membrane, this membrane sends numerous processes into the cavity of the skull, the three most numerous are the, falx cerebri which descends into the longitudinal fissure, between the two hemispheres, the tentorium cerebelli which covers the upper surface of the cerebellum, also supporting the posterior lobes of the cerebrum and preventing their pressure upon the cerebellum, and the falx cerebelli a small triangular process of dura mater so-

-ceived into the indentation between the two lateral lobes of the cerebellum. The function of the dura mater is to support and protect the different parts of the brain.

After passing through the dura mater, the next membrane that makes its appearance, is a thin vascular one called the Pia Mater. It consists of a minute plexus of blood vessels, held together by a fine areolar tissue. It invests the entire surface of the brain, dipping down between its convolutions, and a portion of it is prolonged into the interior of the brain, forming there the velum interpositum and choroid plexuses of the ventricle cavities. It is found to vary in thickness in differ-

end parts of the surface of the brain.

Next in order our attention is invited to that of the brain, which is not an unfolding of the spinal cord, but an entire separate organ situated in the cavity of the cranium. We find in the brain two kinds of substance, white and gray matter. The white matter wherever found, is for conducting impressions to and conveying impulses away from gray matter. If we examine the two matters of the nervous system a little more minutely, we find in the white matter first a sheath and inside of this is found the <u>white substance</u> of Schwann, but this substance does not conduct anything, but out of it we have coming

the central axis of Purkinje, this is the conducting part and is made up of white fibers; all nerves have this central axis, but all nerves do not have the other parts

The gray matter consists of nerve fibers and nerve cells, these cells are peculiar, because they have projections, this means no nerve cell lives by itself, but that it joins with other nerve cells; some of these cells are connected with nerve fibers, but there are no nerve fibers that are not connected with nerve cells. The function of the nerve cells is to receive impression and send out volition. The gray matter is richly supplied with blood vessels and connective tissue, The white matter is also supplied with

connective tissue, but poorly with blood vessels.

The brain is divided into four parts, viz, the cerebrum, cerebellum, pons Varolii and medula oblongata.

The cerebrum is divided into two hemispheres by the great longitudinal fissure, which extends throughout the cerebrum reaching down to the base of the brain in front and behind, but interrupted in the middle by the corpus callosum, which connects the hemispheres together. These hemispheres are covered by a thin layer of gray matter, it is in this gray matter which ends by an edge and is not connected with any other gray substance, except by white fibers that

we feel all sensations that come up from the body, and it is in this gray substance that we begin to send out motor influence, but this motor influence does not go on to the muscles uninterrupted, but passes by white fibers to the ganglia of the brain. When these fibers make their exit from the ganglia, they are found to be fewer in number than when they went in, after traveling a short distance they cross each other and pass on to the gray matter of the spinal cord, and from this point the nerves go out to the muscles. The sensative fibers come from the muscles to the gray matter of the cord and pass up the cord to the posterior part of the brain (crossing some-

- where in their course) and differing from the motor-fibers by not passing through the ganglia of the brain.

But to return to the hemispheres of the cerebrum, we find them convex on their upper surface, level on their under surface in front and concave behind for the reception of the cerebellum. The two hemispheres are connected to the rest of the brain by the two crura cerebri. On the frontal lobe we have three convolutions of importance, the first, second and third, the third which is situated along the fissure of Sylvius on the left side of the brain is considered the seat of language both of words and gestures.

The Fissure of Sylvius is said to exist in all animals whose cerebral surface contain fissures, and is found to exist in the human foetus as early as the third month. On the outer side of the hemispheres this fissure presents an anterior and posterior branch. At the middle and anterior portions this fissure is very deep, and between its folds is concealed a projecting group of short convolutions belonging to the under surface of the brain, called the "Island Reil", it is also situated opposite the lenticular ganglion, it is thought to have something to do with articulate language. The fissure of Sylvius also separates the anterior and middle lobes of the

cerebrum and lodges the middle cerebral artery.

The next fissure of importance is the Fissure of Rolando, it is situated near the median line and runs transversely outward, reaching nearly to the median line of the fissure of Sylvius, dividing the frontal and parietal portions of the hemispheres. In front of and behind this fissure we have two convolutions of importance, for it is in these convolutions and about this fissure, that motor influence resides. After we pass one inch back of the fissure of Rolando motor power no longer exists. This far the greater part of what I have said goes to show,

that the surface of the cerebral hemispheres are especially connected with the manifestations of conscious intelligence; hence the result of injury, disease or disorganization of the hemispheres, is most always a disturbance, diminution, or suspension of the intellectual faculties.

As we have studied the upper surface of the cerebrum, we shall next take up for examination the interior of the hemispheres. If we were to remove the upper portion of the hemispheres, to about a half inch above the level of the corpus callosum, we would find the brain covered with a number of minute red dots or divided capillaries.

In inflammation or congestion, these spots become more numerous and of a darker color. By removing a little more of the brain substance we come to the corpus callosum which connects the two hemispheres, and the interval left between its under surface, the upper surface of the ganglia and the parts closing the interpeduncular space, forms the general ventricular cavity. The upper part of this cavity is divided into two parts by the septum lucidum, and it is thus the two lateral ventricles are formed, which we shall next take into consideration.

The <u>lateral ventricles</u> are situated

in the interior of the brain and lined by a thin serous membrane, from which the cavity receives its moisture. There are two cavities one on each side of the septum lucidum.

The lateral ventricles consist of a body, anterior cornu, posterior cornu (also called digital cavity) and middle cornu. The part called the body is of triangular form situated beneath the corpus callosum and in its floor we find the following parts, viz. the corpus striatum, taenia semicularis, thalamus opticus, choroid plexus, corpus fimbriatum and fornix.

As we find here the corpia striata and optic thalami and on

the outside of the corpus striatum the lenticular ganglion, we will consider them together as forming the cerebral ganglia. On their edge we have a ridge of white fibers called the internal capsule, which is of so much importance, that if slightly injured paralysis will occur and death may ensue. In the corpus striatum as in the thalamus the relations of the fibers to the gray matter is, in general, the same.

The exact physiological function of the cerebral ganglia, is not predetermined, but from known facts of pathology, we are certain that their influence is an important one, since in man, lesions of

these parts must always produce more or less complete hemiplegia on the opposite side of the body.

Between the corpus striatum and thalamus opticus, we find the taenia semicularis a semitransparent band composed of medulary substance. It is connected with the anterior pillar of the fornix in front and behind it becomes lost in the descending horn of the ventricle. In this part of the lateral ventricle we have the choroid plexus it is simply a margin or fold of pia mater. It has communication with the choroid plexus of the opposite side through the foramen of Monro.

The anterior cornu is of triangular form, and is bounded above and in front by the corpus callosum and behind by the corpus striatum.

The largest of the three cornu is the middle, it is situated in the middle lobe and is bounded above by the substance of this lobe and the under surface of the thalamus opticus. On its lower boundary or floor we find the following parts: the hippocampus major, pes hippocampi, pes accessorius, corpus fimbriatum, choroid plexus, fascia dentata and transverse fissure

The hippocampus major is a white eminence curved convexity

like a rams horn, extending along the entire length of the floor of the middle cornu. It is formed by the white convex portion of the convolution of the corpus callosum, projecting into the cavity of the ventricle. the gray portion remaining on the surface of the cerebrum, the edge of which is indentated slightly forms the fascia dentata At the lower extremity of the hippocampus major we have an enlargement something similar to an animals paw, called the pes hippocampi

The pes accessorius is a small eminence of white matter situated between the hippocampus major

and minor.

Beneath the fornix we have the transverse fissure bounded on one side by the thalamus opticus on the other by the fornix. Through this fissure the pia mater finds its way from the exterior of the brain to the ventricular cavity. to form the choroid plexus and velum interpositum.

The septum lucidum is a thin semi-transparent septum, which divides one lateral ventricle from the other and forms also their internal boundary. This septum is made up of two laminae, and between them we have a narrow space called the fifth ventricle.

it is lined also with a serous membrane and contains fluid. It is a separate cavity in the adult, but the septum sometimes becomes softened and partially broken down, then there is a serous effusion into the ventricles

As we view the parts beneath the corpus callosum, the first thing of importance that attracts our attention is a lamella of white fibrous matter called the fornix, situated beneath the corpus callosum with which it is continuous behind and separated in front by the septum lucidum. It is divided into two halves and where they come together is called

the body, but are separated from each other in front and behind to form the anterior and posterior crura.

The body of the fornix is triangular in its form and is separated from the third ventricle by the velum interpositum.

The anterior crura is formed of white fibers, which pass downwards to the base of the brain; there the white fibers make a sudden turn upon themselves and form the outer part of the corpus albicantia, from this point they return to their corresponding thalamus opticus

The posterior crura pass down into the descending horn of the

lateral ventricle, its thin edges form the corpus fimbriatum. The foramen of Monro may be found between the anterior extremities of the thalami optici and the anterior pillars of the fornix.

The velum interpositum is a reflection of pia mater which passes from the exterior of the brain to the interior of the brain through the transverse fissure.

The third ventricle is bounded above by the velum interpositum, from which we have suspended the two choroid plexuses of the third ventricle. Its floor is formed by the parts that make up the interpeduncular space. Its sides

by the optic thalami. In front, by the anterior crura of the fornix and a portion of the anterior commissure; behind, by the posterior commissure, and the iter a tertio ad quartum ventriculum. In the ventricular cavity we find three commissures which cross it; from their position they are named, the anterior, middle and posterior. The anterior is a round white cord, which perforates the corpus striatum on either side. The middle is composed almost entirely of gray matter and passes into the optic thalami. The posterior commissure is composed of white matter and connects the two thalami optici.

The third ventricle has four openings; Through the foramen of Monro we have the lining membrane passing into the third ventricle from the lateral, and from the third to the fourth through the iter a tertio, and ending in a cul de sac in the iter ad infundibulum. On the floor of the third ventricle, we find a great amount of gray matter. Behind the third ventricle we find the corpora quadrigemina and upon this rests the pineal gland, which contains a transparent viscid fluid and sometimes a sabulous deposit.

The corpora quadrigemina consists of four rounded em-

-inences, resting upon the pedun-
cles of the brain, composed of gray
matter. The deep origin of the optic
nerve has been traced to the corpora
quadrigemina.

In the canal leading
from the third to the fourth ven-
tricle, we find the valve of Vieus-
sens, situated between the two
processus e cerebello ad testes. It is
composed of a thin lamina of
medullary substance, on the up-
per part we find a ridge
called the frenulum and on
either side may be seen the
origin of the fourth nerve.

The corpora geniculata are
two small oblong masses, placed,

one on each side of the corpora quadrigemina and are connected with the optic tract.

Turning to the base of the brain, as it comes next in order, we find in the intermediate portion of the longitudinal fissure a great transverse band of white matter the corpus callosum. It is connected with the tuber cinereum by a thin layer of gray substance, the lamina cinerea. You also see a broad white band on each side passing out from the under surface of the corpus callosum and extending to the fissure of Sylvius; these bands are called the peduncles of the corpus callosum.

Next we would come to the lamina cinerea a thin layer of gray substance extending from the termination of the corpus callosum to the tuber cinereum. It also forms the anterior part of the inferior boundary of the third ventricle.

The olfactory nerve, with its bulb, may be seen on either side of the longitudinal fissure. At the roots of this nerve, we come to the anterior perforated space, it is of grayish color, and corresponds to the under surface of the corpus striatum; it is perforated by numerous minute apertures for the transmission of a number of minute straight vessels into the corpus striatum.

The optic commissure which is the point of junction between the two optic nerves, is found situated immediately behind the lamina cinerea, just behind the optic tracts and between them and the crura cerebri is the interpeduncular space, in this we find arranged in order the tuber cinereum, infundibulum, pituitary body, corpora albicantia and the posterior perforated space

The tuber cinereum is situated between the optic tracts and the corpora albicantia and consists of an eminence of gray matter. It forms part of the floor of the third ventricle and we also have projecting from the under surface of the

tuber cinereum a tubular process of gray matter the infundibulum

The next thing that we find in this lozenge-shaped interval according to order is the pituitary body. This is a small oval body situated in the pituitary fossa or Sella Turcia of the sphenoid bone. It consists of two lobes and is a small reddish gray mass weighing from five to ten grains.

The corpora albicantia is placed immediately behind the tuber cinereum. It consists of two masses of white matter externally and gray matter internally, they are connected together by a transverse commissure of gray matter. These masses

are called the bulbs of the fornix, because they are formed by the anterior crura of the fornix, which after descending to the base of the brain, are folded upon themselves before returning or passing upwards to the thalami optici.

The posterior perforated space can be found between the corpora albicantia and the pons Varolii, & forms part of the floor of the third ventricle, and is perforated by numerous small orifices which transmit blood vessels to the thalami optici.

The crura cerebri comes next under our consideration, they consist of two thick round bundles of white

matter externally and granular internally, situated beneath the corpora quadrigemina. If we look up their composition we find them made up of three parts crust, locus niger and gray substance. Through the crust pass the fibers of the corpus striatum and lenticular ganglion and through the gray matter the fibers of the optic thalami pass conveying reflex action. Through the crura cerebri all sensation and volition must pass to and from the cerebrum.

Pons Varolii

The pons is situated between the lateral hemispheres of the

cerebellum. It is composed of both transverse and longitudinal fibers intermixed with grey matter. The sides of the upper surface become contracted into thick rounded cords. the crus cerebelli, which enter the cerebellum and there become its middle peduncles.

The function of the pons is thought to be that of sensibility and volition, when once destroyed the animal body is reduced to a helpless and unconscious machine, retaining respiration with circulation and some other reflex actions.

Medulla Oblongata.

It extends from the upper part of the atlas to the upper edge of the pons Varolii and rests upon the basilar groove of the occipital bone. On front we have an anterior and behind a posterior fissure.

These two fissures divide the medulla into two halves these are again divided by grooves into the anterior pyramid, lateral tract and olivary body, restiform body and posterior pyramid

The anterior pyramids are situated one on each side of the anterior fissure, on separating the pyramids we find a decussation of four or five bundles of white matter, they do not, however

ever all come from the anterior pyramids, but are formed mainly from the fibers of the lateral columns of the cord.

The lateral tract is situated between the anterior pyramids and restiform body, it is continuous with the lateral column of the cord.

The olivary bodies are two prominent oval masses, situated behind the anterior pyramids, it is composed of white substance externally and gray matter internally, in the shape of a capsule with tooth like projections, open at the upper end called the corpus dentatum.

The restiform bodies are the largest columns of the medulla oblongata situated between the lateral tracts and posterior pyramids of the medulla. As they ascend they diverge and assist in forming the lateral boundary of the fourth ventricle.

The posterior pyramids are situated one on each side of the posterior fissure. They are continuous with the posterior median columns of the cord and consist of white matter.

In the lower part of the medulla we have the arrangement of gray matter similar to the cord. but in the upper part

of the medulla it becomes more abundant.

In the medulla oblongata we have the fourth ventricle bounded laterally by the processes e cerebello ad testes above and below by the seperation of the restiform bodies and posterior pyramids of the medulla. The roof is formed by the valve of Vieussens and the under surface of the cerebellum, the floor is formed by the posterior surface of the medulla and pons. The lining membrane of the fourth ventricle is continuous with that of the third through the aqueduct of Sylvius.

Next comes the physiological properties of the medulla oblongata, which pathological evidence goes to prove that it is connected directly or indirectly with the movements by which air and food are introduced into the body. It is said also to preside over the immediate muscular combinations concerned in the production of the voice

The Cerebellum

It is inferior in size to that of the cerebrum, and is that portion of the brain contained in the inferior occipital fossa. It is composed of

gray matter externally and white matter internally. It is not convoluted like that of the cerebrum, but consists of a number of furrows and ridges.
The upper surface consists of two lateral hemispheres connected together by the superior vermiform process

The under surface is divided into two lateral halves by a depression called the valley, in this we have lodged the back part of the medulla oblongata, and from the floor of the valley we have projecting the inferior vermiform process.

The cerebellum is composed of gray matter externally which is penetrated by white fibers comming from the interior of the cerebellum. In the white substance of the cerebellum we have an isolated deposit of gray matter, folded in irregular tooth like projections, whence its name corpus dentata, it seems to occupy a place in the cerebellum analogous to that of the cerebral ganglia and to that of the olivary nuclei of the medulla oblongata

The peduncles of the cerebellum are the superior, middle and inferior, they serve to con-

-nect the cerebellum with other parts of the encephalon. The superior peduncles connect the cerebellum with the cerebrum, and the inferior peduncles connect the cerebellum with the medulla oblongata. and the middle peduncle connects the two hemispheres together.

The function of the cerebellum next attracts our attention. From pathological observation in the human subject; we are persuaded to believe that it has close connection with the power of coordination. It cannot be regarded however, as exclusively presiding over this function. Since there

is strong evidence that the posterior columns of the cord are in a great measure devoted to the same purpose.

I will conclude by saying something of the supply of blood to the brain. It is derived from two great sources, the vertebral and internal carotid arteries. The vertebral arteries come together and form the basilar artery, which divides again into several different branches, among which the most important are the posterior cerebral arteries. The internal carotid passes through the temporal bone and forms the

middle and anterior cerebral arteries.

The coats of the blood vessels in the brain are not as thick, and the vessels do not penetrate the brain substance and branch, as they do in other organs of the body, but run along on the surface of the brain dividing, and sending capillaries into the substance of the brain.

The middle cerebral artery supplies the most important parts of the brain, one branch supplies the third frontal convolution, another the convolutions along the fissure of

Rolando and one supplies the ganglia of the brain. When this artery is affected we have a hopeless paralysis.

We can have one part of the brain in a state of hyperaemia, while another part is in a state of anaemia, as for instance when a person laughs, weeps or meditates on a certain subject the whole brain is not involved but only a part. From this we may infer that when a medical student fails to answer on his final examination, he is not able to supply that part of the brain with

blood. which holds in store the essence of all the valuable lectures of the past two sessions

5

Scarlet Fever

Scarlet Fever (Scarlatina, Febris Rubra)

"Definition. A contagious malady characterized mainly by a diffuse punctiform scarlet eruption appearing usually on the second day and by an inflammation of the fauces and tonsils."

Causation and History

Up to the 17th century this affection was confounded with measles. Then [illegible] as a distinct disease and is so recognized by all medical authorities. Its prevalence seems independent of season or climate. Children [illegible] in much larger proportion than adults, but that probably not because of any special proclivity to it

common diseases, not because of its frequent prevalence and highly infectious nature, and the greater number of children become exposed to it, have it, and thus acquire protection. A disease occurring [illegible] and highest mortality from the third to the fifth year of life. It usually assumes an epidemic form for a season and then for months disappears altogether. Its characteristics are more variable than most any other disease. One epidemic may be marked by certain distinguishing features quite dissimilar to those of a previous epidemic. It may in one case present an ailment so trifling that the child scarcely ceases to play, and its sickness [illegible] [illegible], and in another [illegible] so that the skill of the most eminent physi-

[illegible] with the aid of the most powe[illegible]
d[illegible]gs is unable to stay the course [illegible]
[illegible]ort[illegible] time of this malady. The remarka[illegible]
[illegible] variations of the character, severity and
[illegible]ptoms of this affection have given
[illegible] to the following subdivisions —
Scarlatina Simplex - Scarlatina
Anginosa - Scarlatina Maligna
Scarlet Fever rarely occurs a second time
in the same person, yet second and even
third attacks [illegible] to occur
It is noticed that nurses who have had
scarlet fever, attending patients with
this disease [illegible]
sore throat [illegible] attendance.
[illegible] this is a mild attack [illegible]
[illegible] scarlet fever is a disputed question
[illegible] say that it is a mild attack

[illegible] fever. Beyond [illegible] the [illegible] tagu[illegible]
scarlet [illegible] is most powerful and [illegible]
It may be carried considerable distan[illegible]
[illegible] of the atmosphere [illegible] so [illegible]
this are noticed in all the large hospitals
[illegible] it is carried through the whole
[illegible]
building [illegible]
communication is carried on. It may
carried in the clothes for months and
[illegible]
[illegible] transmitted by [illegible] inoculation,
as inserting the fluid of scarlatinal
vesicles beneath the skin of those
who have not had it. Women at partu[illegible]
[illegible] cases [illegible]
[illegible] apparently [illegible]
[illegible] The period when this disease

comes infectious is not well marked, [illegible] as the fever develops itself, and that the danger increases with the development of the rash and it is infectious until the desquamation has been completed. It may lie latent in the system for from seven to ten days, but the time of incubation has been known [illegible] weeks.

Symptoms and Diagnosis. The invasion [illegible] may commence with a chill, but not unfrequently it is wanting. Fever is usually [illegible] accompanied by such symptoms as usually occur in fever, headache [illegible] delirium and [illegible] The rash is an important diagnostic sign

of the disease, it usually occurs within the first twenty four hours. Irritability of the stomach, when it is persistent often indicates a serious form of scarlet fever and therefore is prognostic of an unfavorable case. When this symptom is absent or we find only a slight nausea we generally have to expect one a mild case. The bowels are regular or a little constipated. If there is diarrhoea it is usually transient and very slight. Sore throat usually makes its appearance in the first stage and the patient may complain of a pain in the neck and limbs. Sore throat, vomiting, the peculiar strawberry like redness of the tongue, the scarlet rash, the great rise in temperature and increase in frequency

the pulse, are the most characteristic
features of this disease. The rash makes
its appearance on the second day. It
usually shows itself on the neck, face
and breast and during the next twen-
ty four hours will make its way over
the extremities. But occasionally it does not
the regularity of the small pox or
measles and may first appear on the
body or limbs and then extend to the head.
As regards the degree of intensity, different
distinct cases differ widely, the rash in one
case may be so faint that it is hardly
distinguishable, while in others it is
of a vermilion or scarlet hue. Its first
appearance is in minute dots, and these
coalesce forming irregular distributed
patches which disappear on pressure and

return [illegible] [illegible] in [illegible], [illegible] they return slowly it is a sign of sluggish capillary circulation when the slowness of return is marked it indicates a malignant form of this disease. The redness is most vivid and remains longest in [illegible] where the skin is most delicate the armpits, the groin and the [illegible] of the [illegible] and thighs. In some few cases the rash continues in maculae or spots. The rash consists of minute rosy papules, due to the conical elevation of the cutis [illegible] the points of emergence of the [illegible]. To the touch they are [illegible], [illegible] in the condition known as [illegible] they can be felt over the [illegible] of the skin. The [illegible] [illegible] until then the surface has a look of uniform redness.

Often the patches continue irregular in form and do not [illegible]. The [illegible] face rarely has distinct patches or [illegible] but sometimes very irregular pink spots appear there. The rast continues to deepen in color for three days and causes intense itching and burning. The inflammation [illegible] rarely [illegible] reaches its intensity on the third day and begins to exfoliate from the [illegible] the eighth day.

Exfoliation of the skin of the whole body occurs. It commences about the face and neck and occupies several days before exfoliation of the epidermis of the whole body is accomplished. [illegible] it comes off in flakes [illegible] as on the palms of the hands or soles of the [illegible]

[illegible] uses. A cardinal rule is "Never think that the disease is dangerous in proportion to the abundance of the rash", for in some of the most malignant cases [illegible] no rash at all.

In scarlatina simplex the rash may hardly appear and the child scarcely ceases its play on account of the disease, in fact it may not be noticed at all. Not until some unpleasant sequellae such as dropsy, anasarca, albuminuria, or uraemia make their appearance [illegible] the child has had scarlatina. The simplest cases are often [illegible] by the most unpleasant sequellae. Cases are recorded [illegible] the child never went to bed at all, but [illegible]

from the aspect of the disease was scarlatina [illegible] a [illegible] anasarca and [illegible] one case mentioned the child became a[illegible] It is (even in its simplest form) a disease in which we can not give a correct prognosis of its [illegible]

Scarlatina Simplex [illegible] its course in about a week and is often not followed by a desquamative stage or the desquamation [illegible] as not to be noticed. If the patient is exposed to cold during the stage of desquamation, most danger is to be apprehended from rheumatism [illegible] [illegible]nia and other complications. In young infants this disease always assumes this form [illegible]

cases a rash without any [illegible] of fever and were it not for the preva[illegible] of an epidemic of the disease at the time we would [illegible] to [illegible] it. Infants under three months old are not liable to have it. Some writers [illegible] months old never have it.

Scarlatina Anginosa — In this form of scarlatina the violence of the disease [illegible] are swollen and suppurate during the [illegible] may [illegible] or may turn from white to gray and then assume a brownish cast and at last come away and leave [illegible]

ulcerated [illegible] of [illegible] disease
as a acrid and smelling fluid,
The ulceration may [illegible] to the [illegible]
causing a stomatitis; or up the eustachian
[illegible]
and [illegible] causing [illegible]
[illegible]
[illegible] causing and [illegible]
[illegible] discharge to come from the
nose. The swelling of the palate and
tonsils may be so great as to cause
[illegible] that the
patient refuses to take its medicine or
[illegible]
as to cause death by suffocation.
[illegible] red and as-
sumes a strawberry like appearance, pe-
culiar to this disease; caused by its [illegible]

-fir as [illegible] inclination [illegible] the [illegible]
[illegible] coats [illegible]. The [illegible] are [illegible]
dry and cracked.
The [illegible] continue [illegible], and
the urine scanty and dark colored.
The rash [illegible] and covering the [illegible]
[illegible]
the neck swell and become very hard,
[illegible]
abscesses after the rash has disap-
peared.
Scarlatina Maligna — Here the disease
comes [illegible] a death dealing [illegible]
at once [illegible]
[illegible] the morbid cause of this dis-
ease. [illegible] depress-
ion so intense, that no reaction follows,
or the eruption instead of [illegible]

car [illegible] grows livid or disappears and [illegible]

[illegible]

ds this life.

[illegible]

106° [illegible]

[illegible]

[illegible]

[illegible]

[illegible] or cold. The case may start with [illegible]

[illegible] well marked; vomiting [illegible] and

[illegible] sink and die even before the [illegible]

[illegible] time to develop itself, or the [illegible]

tion of the throat has been noticed.

[illegible] the patient may at once [illegible]

[illegible]

to the muttering, coma [illegible], occa

[illegible]

[illegible] occur [illegible]

make a marked reduction in temper-
at[illegible] [illegible] di[illegible]
esis. [illegible]
[illegible]
[illegible]
[illegible] practice [illegible]
[illegible]cations [illegible]
[illegible] practice [illegible]
[illegible] children [illegible]
[illegible]
[illegible] disease. So [illegible] most [illegible]
means of reducing the temperature and
[illegible] used by the practi-
tioner. Many [illegible]
and no doubt [illegible]
produce diaphoresis [illegible]
[illegible]
[illegible]

[illegible] is [illegible] the surface is warm and it also [illegible] The carbonate of ammonia [illegible] ammonia [illegible] recommended [illegible] [illegible] uraemia and in view of [illegible] boubles occurring in the [illegible] case it is considered [illegible] to use them. [illegible] temperature, aconite [illegible]

for the same purpose, but
especially to reduce the temperature
... allays itching ... inunction of ...
... with from ii to v atts. of carbolic acid
℥ is highly recommended by ...
... inunction, as it is cooling and
d... l ... a ... t ... the
...
... at ... t ... t ... a
... t ... ca ... at ... g ... l
... must use the most stimulating
treatment that can be given. Ammo
... alcoholic stimulants, such as
... whey, milk punch and egg ...
...
large doses to cause active dia...
as well as to stimulate. We ...

5

t can [illegible] aspirated [illegible] the [illegible]

[illegible]

[illegible]th, as hot as can be borne by the

patient. [illegible] there is a tendency to

[illegible] administ[illegible]

[illegible]

[illegible] should be treated [illegible]

[illegible] care. The otorrhoea of scarlatina

should be treated with astringent wash-

es, the ear should be syringed out with

[illegible]

[illegible] prescription [illegible] recom-

mended by [illegible] Carbolic acid

[illegible]

[illegible]

scarlatina [illegible]

[illegible] that [illegible]

donna acts as a preventive against

scariatina. When scariatina breaks
out in a family the sick should be sepa-
rated from the well and those not having had
previous attacks of scariatina should [illegible]
[illegible]
be given till a dryness is felt in the throat
the pupils slightly dilated and the [illegible]
[illegible]

Yellow Fever

S. J. McCain.

1879.

— Yellow Fever —

With the loss of twenty thousand lives and the expenditure of millions of dollars during the epidemic of 1878 in the south, no one, however old or young, should offer an apology for an opinion on a subject of such vital importance.

An opinion, based on what is deemed good authority, is a plausible excuse for an error contained therein. — In the animal economy, with man for its representative and philosopher, the products of two minor divisions, — Cause and Effect, has been adopted: — In examining this all-important subject we must not disregard the additional clinical phases offered by some of our ablest medical authorities; and with a degree of con-

-cussion this subject will assume
three divisions, viz:—

1st Animal, or vegetable impurities as
a cause.

2nd Yellow Fever as an effect.

3rd Final development of the cause.

In studying the cause of Yellow Fever
we must regard and note its period of
incubation, especially directing attention
to the extremes of heat and cold, and the
atmospheric condition of moisture, coupled
with other hygienic surroundings and
the almost invariable want of proper
drainage of the locations in which we
find the disease. That these are the con-
-ditions presenting that produce Yellow fe-
-ver seems evident because it is an
abnormal effect, (and this is shown by its
not being epidemic each year.) produced
by an abnormal cause. Excessive heat

is not characteristic of each summer, nor is extreme cold characteristic of every winter; and we find no proof that yellow fever actually follows the one or the other, unless in conjunction with another, and evidently great cause, for its prevalence: Then, we must direct our attention to these, as the co-operative causes of yellow fever, — heat, cold and moisture, and their conjoint action in its propagation.

If it were produced by cold, the northern states would be more subject to it than the southern; but its decrease and final extermination by the approach of cold, autumn weather, leaves us but the conditions of heat and moisture to examine. From the fact that moisture is readily absorbed by the vegetable Kingdom, succeeded by rapid vegetable decomposition, under heat

and from the fact that the essential, or Idio-
-pathic fevers are the immediate consequence
of long continued heat, it is reasonable to
conclude that Professor T. D. Bell, of Louis-
-ville, Ky, was correct in his statement that
vegetable material and moisture are the
causes, and heat the exciting, or developing
cause. To be more explicit, we will quote the
language of this eminent scholar, —
"that the daily temperature of 75° Far: for
three months, acting on moist vegetable
material in a state of decomposition, will
develope yellow fever". Prof: Bell also
claims that "a daily temperature of 60° Far:
for two and one-half months, acting on
moist vegetable material in a decompos-
-ing state, will produce Remittent fever".
When the assumption that yellow fever
and remittent fever are produced by the
same morbid conditions, is an accomplished

calling for analogy.

First, noting the difference between the producing and developing causes of these two diseases, we have, —

Yellow fever caused by 75° of heat, acting for three months on vegetable decomposition: —

Remittent fever caused by 60° of heat, acting for two and one-half months on vegetable decomposition: the difference being 15° Far. and one-half a month of time.

Next, we will notice the analogy of the symptoms, —

Yellow fever has excessive jaundice.

Remittent fever has jaundice.

Yellow fever has excessive lumbar pains.

Remit^{t} fever has lumbar pains.

Yellow fever has albumen in the urine continuously.

Remit^{t} fever has albumen in the urine in the cold stage.

Yellow fever is accompanied with copious hemorrhages, not only from the mucous surfaces, but also from abrasions of the skin.
Pernicious remittent fever has hemorrhages from the various mucous outlets.
Yellow fever has black vomit.
Pernicious remittent fever has black vomit.
Yellow fever has an enlarged spleen. (As shown by T. C. Summers, of Nashville, Tenn, in autopsies held in Memphis, in August 1878.)
Remittent fever has an enlarged spleen, at times, and chronic intermittent fever has, almost invariably.

What does this comparison show? — That the little word excessive can be appropriately applied to every true case of remittent fever and cause it to assume similar phases to yellow fever.

Pathologists have long since decided a majority in favor of the supposition that

certain essential fevers (remittent and intermittent for example.) are caused by a morbid state of the atmosphere known as malarial:- If then, malaria shows itself on the subject thus poisoned, by producing jaundice in Remittent fever, it is reasonable to conclude that the excessive jaundice of yellow fever is produced by malaria in a more active and perilous form. T. O. Summers, of Nashville, (whose investigations we are forced to accept.) in his autopsies on yellow fever, declares through the Press, that the only organic change, in the cadavers examined, was an enlarged spleen, and that it was three or four times its normal size.

All admit that intermittent fever is caused by malaria:- What is its sequel in a great many cases?- Anemia, debility and markedly an enlarged

splen. If then, malaria enlarges a man's splen who has had chills and fever, all, whose minds are free from popular prejudice, every one whose desire is to investigate without regard to a formal ism, must, in order to get the true path-ology of yellow fever, study the ultimate and more dangerous effects of malaria.

With a brief summary of what has been shown, we must conclude that Remit-tant fever is a mild effect of malarial poisoning, amenable to treatment, and that yellow fever is a severe effect of malarial poisoning, not amenable to treatment in a majority of cases.

From the forgoing, it may be presumed that this article denies any distinction, except in the severity of the one, and com-parative mildness of the other, - between yellow fever and other malarial fevers but

m will admit there is great difference, as pointed out by Prof. T. S. Bell, and others, referable to the Kidneys and revealed by their microscopic examinations; and in my opinion, this is the only one. Confessing my ignorance as to the true nature of this difference, (being unacquainted with the use of the microscope) I give my opinion that whatever may be the changes in the Kidneys, they are still only due to the pernicious effects of malaria. My inexperience gives little weight to this opinion, but it is diagnostic, both as to nature and cause, in the hands of those whose ability and experience justify experiments.

We will now examine the third division of our subject, — The further development of the Cause. —

Upon this sentence hangs the controversy of the medical world. — Does this great

plague exist as a living germ, or does it
sway the sceptre of destruction only in the
form of impurely impregnated air?— There
seems to be a line of demarcation between
the Northern and Southern climates, that can-
-not be more sensibly appreciated than in noting
the diseases peculiar to both. Remittent an Inter-
-mittent fevers are unknown in the extreme North-
-ern states, from the fact that their admitted causes
do not exist. Since yellow fever does not visit
the northern states as an epidemic and is the
only epidemic restricted to the South (while
cholera, diphtheria, variola, varicella and dysentery
equally affect both climates.) we must conclude
that its nature is intimately connected with
the predominant feature of the south, known as
malaria, and, more or less felt by all its in-
-habitants. History, with Medical writers as
historians, tells us that diphtheria is parasitic
with reference to nature and cause: it also

tells us that diphtheria is truly a contagious dis-
-ease, without respect to persons, climate, or
locality. It would be a bold step in a new
and inexperienced writer to attempt to affirm
that diphtheria is not parasitic and con-
-tagious: It would also be presumption to
deny that a diphtheritic patient could go from the
excessive heat of the south to the regions of the
extreme north and give diphtheria to those
with whom he came in contact. In all parasitic
diseases, it is evident that the parasite causes
its contagion. If diphtheria is parasitic and,
hence, contagious, must we not conclude that
if yellow fever is parasitic, it must also be
contagious? — Does it seem possible that the
parasite in the one case causes contagion, and
in the other, does not? — Yet, writers now
contend that yellow fever is a parasitic
disease, and also positively affirm, with
sufficient evidence, that it is not contagious.

Malaria is an endemic cause producing endemic disease:— We learn from medical writers that malaria cannot cross the smallest stream:— but every District of the South, having heat and moisture acting on vegetable matter, can generate a cause sufficient to make it endemic all over the South. I must conclude that Prof^r T. S. Bell is right, and that the true cause of yellow fever is filth of all kinds, vegetable decay, improper drainage and hygienic enactments; and that it is developed from impregnated atmosphere only, by Solar Heat.— If this is an error, I hope it will be eradicated.

S. J. McCain

A Thesis

on

Yellow Fever

by

Frank T. Lincoln

of

Georgia.

February 1879.

In order to treat this subject rationally, a suitable subdivision is necessary, and following that which suggests itself most naturally to the mind, I have divided it into the following heads: Etiology or Causation, Symptoms & Clinical History, Anatomical Characters, Prognosis and lastly Treatment. It is my purpose to take up these various heads, in the order in which they have been enumerated, & by pending upon each, what little information I have been able to obtain in regard, and to state what opinions I have formed upon them.

Etiology.

The causation of pelvic tumors

always has been, but especially at the present is, a matter of vast and engrossing importance not only to the medical profession alone, but to the whole country in general. For prevention, which is the only safeguard, all treatment being for the most part unavailing, is almost impossible unless the origin is known. I think that it is now allowed by all investigators that this disease is a manifestation by the system, of the reception into it of a poisonous complex organism, growth whether animal or vegetable in the present state of knowledge it is impossible to say. This seems

to be supported by several facts, which render it almost undeniable. In the first place, the fever is destroyed and an epidemic put an end to, by the temperature causing frost, which certainly seems to point to some form of life. Again the ease and readiness with which it is transported from place to place indicates a material existence and not a vitiated state of the atmosphere alone, as has been supposed by some.

The question at the present time is; whether it is capable of originating per se in this country, whether it is indigenous, or whether its presence here is to be

accounted for by the theory of importation alone; a question, which, in spite of all the investigations of various learned commissions, appears now no nearer a settlement than formerly.

It seems in my poor judgement, that this fever is a natural product in the lower Southern States, although the contrary is now the generally accepted theory.

The conclusion that it is indigenous to this soil, is based upon the fact that not a few persons, but that a larger or smaller number of sporadic cases come under the care of physicians in all parts of the country most con-

monly subject to influence, while at the same time there are no signs of an epidemic and none ever appear. Now this would seem to set aside the theory of importation being the sole cause, for in order to account for these isolated cases, we would be obliged to have importations of the germ every year, which most certainly does not happen; or else they must originate on the spot. Hence the conclusion seems irresistable, that the germs or fomites of the disease are always generated during the hot season, in those parts of the country below a certain latitude, but that their development into an active poison

is dependent upon certain peculiar conditions of the atmosphere. What this condition exactly is, is very difficult to say; but all former experience seems to point to intense heat and dryness of the atmosphere; combined with a bad system of drainage as the most important factors. This theory appears also to explain the presence of isolated cases occurring from year to year; it being possible, that some individuals may be unfortunate; or be in a condition to develope (this germ in the system) which would otherwise remain perfectly innocuous. In regard to contagion, although not

the sole mode of propagation, the disease is allowed by all to be contagious to a considerable degree. To support which see its confinement to cities and thickly inhabited localities; also the fact that it usually begins in one quarter of a city, and extends over its whole area by a gradual advance; and again the presence of one infected person will usually contaminate an entire household before totally exempt.

Symptoms &c.

The onset of this fever is generally very strongly marked, and very abrupt. The prodromal symptoms being usually of so trivial a nature, as to be entirely overlooked or disregarded

by the patient. Before the inception of the chill, which in most cases forms the first active symptom, the patient experiences slight wandering pains, in the back and loins, a ~~[illegible]~~ feeling of general lassitude and weariness, and a peculiar burning thirst, which the greatest quantity of water will not satisfy. These symptoms gradually increase until they culminate in a chill, or which is quite as common, a high fever. The pains which have been wandering before, now concentrate themselves in the lumbar regions and across the brow just over the eyes, the eyes themselves also assume their characteristic smoky hue, and there is

combination with a peculiar blowing or inflated pulse, give the chief diagnostic points of a true Yellow Fever. Derangement of the stomach, and vomiting, generally accompany the ~~fura~~ ending stage, but are by no means constant. The fever continues a length of time, in proportion to the severity of the case, but rarely ever longer than three days. From all the works, it appears that patients never die during the febrile movement but only after the paroxysm has been subdued, and what is known as the period of calm has set; but from what little experience I have had, it seems that they generally do die in the febrile stage, with an accompanying black

vomit, and that when they safely pass this stage, with good nursing & etc they generally recover. If however, death does not occur until after the subsidence of the fever, it appears to be due to a general failure of the circulation. The pulse becomes slower than is normal, the skin cold, and in some cases even capillary congestion takes place, and finally vomiting sets in, clear and transparent at first, gradually becoming darker, until it assumes that peculiar well known "Coffee grounds" appearance, and which gushes without the slightest effort, from the mouth and nostrils of the patient, who slowly passes into another world, apparently suffering neither in body or mind.

The complication, which usually accompanies fatal cases is a suppression of urine; in fact in the late epidemics which have occurred in the south it was almost a constant factor of all cases ending in death. In regard to nervous symptoms; the mind is generally clear throughout the whole course of the disease, unless attended by the complication just mentioned, namely, a suppression of urine, which gives rise to uraemic poisoning, convulsions and coma. But in all cases of black vomit the last hour or two of the patient's life is passed in a state of complete collapse and stupor, probably due

in the immense loss of flesh. The third stage which is what most is one of collapse, in those, which terminate in recovery is one of convalescence, the patient slowly regaining health and strength; and unless a return of the fever occurs it may be considered a termination of the disease. In cases of relapse the same train of symptoms are gone over again with the exception however of a pain in such in ninety nine cases out of a hundred, it being almost as rare a thing for the case of relapse to recover, as for one of black smit.

Anatomical Characteristics.

There are no peculiar anatomical characteristics in this disease, with, perhaps the exception of the discoloration of the liver, which assumes a peculiar yellow or boxwood; all the post mortem appearances being evidently accidental. The intestines in some cases have reddened and softened, and the large black spots, supposed by some writers to be gangrenous. But none of these are constant, and hence pathologists of the present day, are as much in the dark as those who have preceded them, as to the causes of the phenomena in

ible during life. The characteristic result of this disease has been the source of considerable inquiry, and difference of opinion, but it is now the generally accepted theory that it is blood changed and decomposed by the gastric fluids, and this is to be inferred from the fact that the same changes can be produced external to the organ, and also that the blood found in the system does not present these changes.

Prognosis

In different epidemics, as a matter of course, the per cent of deaths varies, ranging any

where from two to twenty five.

The most fatal symptoms are extreme yellowness of the skin and conjunctivae, delirium suppression of urine black vomit and coma the last three, almost always portending death. A favorable prognosis can never be made in any case as unforseen accidents are liable to occur at any time causing a fatal termination. Back acclimated persons bear it better than foreigners, dark complexioned persons better than blonds, and adults better than children. In those cases which do not die from uremia caused by suppression, the mode of death is from asthenia.

Treatment

The treatment of this malady has always been, and will probably continue to be, unless greater strides are made in the science of medicine than there is any reason to hope for, a matter of much discussion and great difference of opinion. There is not, in the present state of our knowledge any drug, which has the slightest claim to specific virtue. Many have vaunted the value of Quinine, but, as experience shows, without the slightest ground for so doing, fully as many cases, if not more, dying under its use, as when it was omitted. In fact this drug is said by some writers on practical cases

to be, not only of no value but on the other hand, decidedly injurious. Dr Stille in his work on Mat. Med & Therapeutics states this as his opinion. We are then reduced, simply to a treatment of the symptoms, as they occur. It is the general practice for the physician, as soon as called, to administer a mercurial purge, Calomel being the best form, and to ~~administer~~ promote the action of the skin by hot mustard foot baths, repeated every two hours, if necessary, also to apply mustard plasters to the epigastrium. This may seem to be routine practice, but experience has shown it to be by far the most efficacious mode known

the Mercury relieving the congestion of the liver, and torpor of the Bowels, so common to the fever in its incipiency whilst the pediluria promote the action of the skin, and the external applications procure a certain amount of revulsion, drawing the blood to the external organs. The attention should be directed to lowering the Heart's action, and for this there is no better remedy than Fr. Acon Rad combined with the Neutral Mixture of the U.S. Dispensatory, which latter acts as a refrigerant diaphoretic. In cases of gastric irritability, counter irritation over the epigastrium, Creasote and the dilute Hydrocyanic Acid

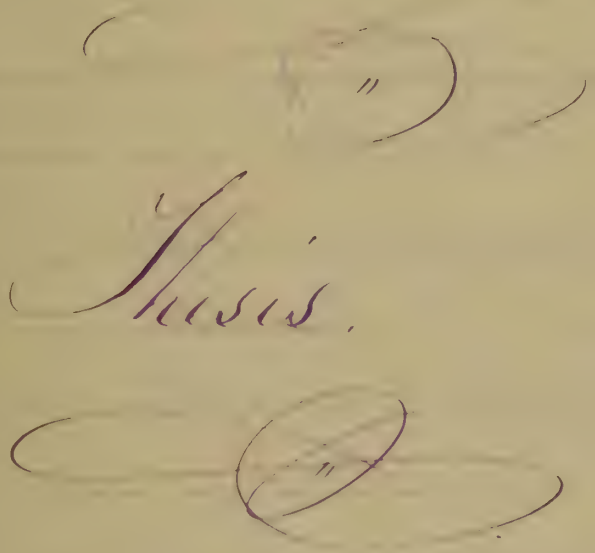
are all useful. To check or pre-
vent black vomit a number of as-
tringents and haemostatics have
been used with varying success; but
one which I saw exhibited by my
preceptor in a number of cases with
markedly good results is Ergotine;
I have never seen the remedy men-
tioned by any writer on the subject,
but it seemed of so much use that
it is certainly worthy of a more exten-
ded trial, than has yet been allow-
ed it. Some physicians have advocated
cold baths, and affusions for lowering the
temperature, but there seem to me
to be two vital objections to such meth-
ods. first: they would interfere with
that absolute rest, so essentially nec-

essary to the safety of the patient; and secondly: They would have a most undesirable and fatal tendency to drive the blood to the internal organs, from which the physician is most anxious to keep it. In suppression of urine, diuretic remedies are indicated, and, Blisters over the hypogastrium. In regard to diet, during the paroxysm of fever, and quiescent stage following, it is necessary to support the patient, but at the same time, to tax the powers of the stomach as little as possible. For this purpose, we have nothing better than the beef tea known as Valentine's Beef Juice, this given alternately with a mixture of Lime Water and Milk, or Milk

champaigne, or Wine whey forms an Excellent nutritive and supportive diet. Should the stomach be unable to bear any of these, they should at once be withdrawn, and nutrition administered by enema. If the physician has reason to believe that there are malarial complications, then Quinine is indicated, but until then it is of no use, although administered by some practitioners in every case, by thinking that simply because there is a fever this much abused drug will cure it, and they pour it down until sometimes the unfortunate patient dies deaf and blind from its excessive use. The subject of prophylaxis of Yellow Fever is

at present agitating the whole country
and such measures are being taken
as to lead us to hope, that if the
disease is of foreign origin alone
that its propagation may hereafter
be prevented. Disinfectants are always
brought into use in Epidemics, but late
Experiences have led to doubts as to
their efficacy. But until their useless
has been fully proved they should
continue to be used. The only means of
absolute destruction of the germs or
fomites, or whatever may be the cause,
is cold; and since it would seem
advantageous to subject all suspected ar-
ticles of merchandize, the holds of vessels
to a temperature at or below the
freezing point which could be easy

Easily accomplished, and would be of infinitely more value than the use of the numberless, ill-smelling disinfectants of doubtful value —



An

Inaugural Dissertation

Submitted to the examination
of the
Provost, Regents, & Faculty of Physic,
of the
University of Maryland,
for the degree of

Doctor of Medicine,

Intermittent Fever.

This is a disease characterized by the occurrence of febrile paroxysms in regular succession, and by the absence of fever between the paroxysms; The period intervening between the end of one paroxysm to the commencement of another is called the intermission, and the whole period occupied by one paroxysm and the succeeding one is called the interval,

There are three types the quotidian, tertian, and quartan, the quotidian occurs every twenty-four hours, tertian every other day with an interval of forty-eight hours, quartan every third day with an interval of about seventy-two hours.

There are other types mentioned by authors such as the quintan, sextan, septan, and octan - the last occurring at intervals of a week but they are very rare and it is doubtful if there has ever been a physician who has seen them.

The quotidian is sometimes double, having the paroxysms every day, there is also a double tertian with a daily paroxysm but occurring at different times and with different characters on successive days.

The paroxysms of alternate days correspond with each other, thus the paroxysms may take place one day in the morning and

continue until the third day, and then will occur in the afternoon. There is also a duplicated or double tertian that is going on at different times in the twenty-four hours. The triple tertian has two paroxysms every other day and one on the intervening day, that is three instead of one in forty-eight hours. There are other varieties that are mentioned but are mere refinements of no importance whatever and to my idea of thinking they have no other foundation than the vivid imagination of observers. Each paroxysm of an intermittent when quite regular and fully

formed consists of three stages
the cold, hot, and sweating,
which succeed each other in the order
mentioned.

Symptoms, The fever is seldom
formed at once as various premonitory
symptoms are observed before it has
fully set on, this is called the
forming stage of the fever,
The first symptom is a sense of
lassitude or weariness attended with
yawning and stretching, the muscles
feel sore as if bruised, there is often
a soreness in the limbs pain in the
back, chilliness, and often giddiness,
pain in the head, and loss of appetite.
The spirits are somewhat depressed and

the patient often complains of a feeling of discomfort which he is at a loss to describe, in other words he suffers with general malaise. The person is seized with the above symptoms which in a few hours pass off without much attention being directed to them, is taken the next day about the same hour with the same feeling, and generally a pronounced chill will accompany it, It sometimes seized the patient in the midst of apparently good health without any warning whatever. In the cold stage the patient complains of great chilliness in the limbs and in a short time the

whole body feels as if streams of ice water were trickling over it, the teeth chatter and the bed has been known to shake from the violence of the chill, The hands are shrunken, the features contracted the countenance pale, the lips and ends of the fingers often purple There is also a great desire for drink although the tongue be pale. Independently of tremors alluded to there is often great neuralgic pains in the back loins extremities and often in the head. The cold stage may continue for some time and again may pass off very soon.

Hot Stage, the passage from a chill to the hot stage is not abrupt, nausea for a time, alternate with heat, the heat is very disagreeable to the patient, the heat is felt about the face and temples and gradually spreads over the whole body. If, during the hot stage the limbs are moved into a cool spot in the bed, chills will be felt vibrating disagreeably through the frame, at length the cold stage having entirely passed away universal burning heat takes its place, the cheeks are flushed the eyes sparkle, and the surface becomes wetted and

distended with [illegible]. The temperature of the body is increased the thermometer having ranged as high as 105 degrees. The pulse is more frequent than in health and is full and strong. In some cases when the state of the system is adynamic it is at once frequent and feeble. All the secretions are diminished. the skin is dry and hot the urine scanty and often high colored, convulsions are not unfrequent in children at the commencement of the hot stage and may appear and disappear with the fever, Sweating stage. Transpiration appears first

upon the face and breast gradually
spreading over the whole surface
it is sometimes very slight but
generally very copious. Upon its
first appearance the person will
feel somewhat relieved, and the
febrile symptoms gradually abate
as it advances, The skin becomes
cool the excitement of the circu-
lation subsides the mouth is
moistened, the headache disappears
and the patient generally falls
into a gentle and refreshing sleep.
The kidneys then resume their
function and in the urine which
is discharged there is often found
brickdust sediment on cooling.

Paroxysms are liable to other diversities, sometimes the cool stage is very slight, and exhibits few of its characteristics, cases are not uncommon where the only discoverable signs are a little blueness about the nails and cold ears, hands and feet, occasionally these symptoms are wanting, ~~and~~ and the hot stage set in immediately without any chill preceding it. this is called dumb ague, to distinguish it from the more common form known as staking ague. After the paroxysm have ceased the patient is by no means free from all signs of

disease, there are languor, pain
in the back and loins and some
fur on the tongue, a poor appetite
and sallow complexion. These
however diminish with the continu-
ance of the disease and at
length apparently disappear, the
patient not unfrequently having
the appetite, digestion, and
general vigor, though not perhaps
the aspect of good health during
the interval. Unchecked intermittent
will produce many consequential
effects the most common being
enlargement of the spleen. The blood
which leaves the capillaries becomes
congested in the viscera and frequently

in the spleen which is probably
intended as a diverticulum to prevent
injury from such irregularities of
the circulation to more important
organs. The enlargement of the spleen
subsides somewhat in the apyrexia
but returns in a greater degree
with the succeeding paroxysm,
in some instances it is so excessive
that the spleen extends from
the abdomen and may occupy
half of the cavity—, it is more
or less indurated and is called
ague cake, and is a well known
affection in miasmatic districts
It is more common in the quarta
and less so in the quotidian.

The stronger the disease the more apt it is to be attended with affections of the spleen, Dropsy may occur from this disease caused by the vicarious secretion in the cellular tissue and serous cavities. this has been more frequent after the intermittent has been interrupted. The anatomical character of intermittent fever has scarcely been ascertained. The lesions which have generally proved fatal and which are thus upon dissection are not [illegible] part of the fever being [illegible] purely incidental, Inflamation of the brain and its membranes

cerebral congestion and effusion
gastritis gastrenteritis, pulmonary
inflamation and congestion,
diseases of the liver and spleen
are among the most frequent [illegible]
[illegible] who have labored under
intermittent fever, The liver has often
been found congested and the
blood would be blackish.
The cause of intermittent fever is
miasmata some have supposed
that all cases of intermittent
have the same origen but this
is not correct we every now and
then meet with a case which
can by no possible means be
traced to contagion [illegible]

have been known to arise from temporary irritation, such as the introduction of substances into the urethra, indigestible food in the stomach, etc. Intermittent fever is most common in the latter part of the summer, and autumn before the occurrence of severe frost. Sometimes it appears epidemically occurring in places it has not been known to frequent. In this country it is met with in every place where there is vegetation except near the mountains. Children, and old people, are less frequently attacked with it than those of intermediate age

women less than men probably because they are less exposed to the cause, children are probably liable to it in a tender age. It has often been known to affect the foetus in the womb, as is indicated by periodical trembling in the uterus.

Diagnosis, The only disease that intermittent fever is liable to be confounded with are remittent and hectic fevers, but the former may easily be distinguished by the regularity of its paroxysms. Remittent fever is hard to discriminate from the fact that the fever continues during the whole interval and sometimes it is very hard to

decide which variety of the disease the case can be classed under.

Prognosis. The prognosis is almost always favorable without there is some malignant tendency, some authors state that there is a disposition to cerebral disease and when so apoplexy may be the result. There are other instances of fatal effect from congestion or rupture of the spleen. The chief danger of intermittent is chronic enlargement of the liver and spleen and there is often dropsy.

Treatment. In a great majority of cases this fever requires very [illegible]

patients and sometimes
when left to nature no serious
harm is apt to ensue, but again
there is a time when remedies
are necessary. During the chill
the patient should be put in
bed and covered warmly, and
hot drinks should be given. Heat
may be applied externally, if the
chill be severe vapor baths may be
employed. When there is great
prostration indicated by [illegible]
and feeble pulse the patient should
be stimulated by administering
carbonate of ammonia. Oil of
turpentine externally and [illegible]
will be beneficial in cases of great

heat. Emetics may be given when there is much oppression of the stomach and nausea. The bowels should be evacuated and then you should begin with Peruvian bark or one of its preparations. The most valuable of these is the Sulphate of Quinine. You should administer it in sufficient quantities to produce its full effect. Quinine should be always administered immediately after the paroxysm. If the patient complains of his bladder you should continue with the Quinine as it is a sure sign that the disease has not left the system.

there is said to be a normal amount of Luminidia in the system as it is supposed by some authorities but they have failed to be confirmed and consequently the theory has not gained the attention of medical professors,

I cannot dismiss this subject without expressing to the medical faculty of the University of Maryland my warmest acknowledgements for the able manner in which they have conducted the present course of lectures and also for the kind attention they have manifested towards the medical class of which

their studies and lessening
their labors,

John Swope Mathias

A Thesis

on

Typhoid Fever

By

Charles F. Johnson

of West Virginia

1878-79

Typhoid Fever

Typhoid Fever is a continued fever
[illegible] with morbid inflammation
[illegible] connected with the
[illegible] of the intestines. It is caused by
its approach is insidious and its
peculiar characteristics are many
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] frontal headache [illegible]
a constipated condition [illegible]
[illegible]
[illegible]
[illegible]

[illegible]
[illegible]
-ing in the course of the disease.
This is not always present as (I have)
stated being a disease affecting the
glands of the intestines, the abdom-
-inal symptoms above mentioned
are invariably present in all well-
developed cases.

Synonyms

Its synonyms are numerous it
is the Abdominal Typhus of the
Germans, the Intestinal Fever
of the English. In this country
it is usually called Typhoid Fever,
sometimes Enteric Fever. We prefer
the former appellation because of
its more general use.

-ther proof. Following this increas-
-ed turgidity is a breaking down
of the swollen mucous membrane
and the formation of circular or
ragged ulcers with a central depres-
-sion. If the ulcers are numerous and
deep there is often a coalescing and the
formation of a continuous large
patch. If the inflammatory process
is not vigorous deep seated or gan-
-grenous, perforation of the intestine
is not liable to occur. But if the
ulcerative process extends through
the peritoneal coating we have
that result. It is rare that the
solitary glands are alone affect-
-ed. The mesenteric and mes-
-cotic glands are usually also

[illegible] grow very [illegible]
[illegible] [illegible] ulcer-
-ate to the degree of intestinal [illegible]
[illegible]. The spleen is very much enlarg-
-ed in most cases. The [illegible]
-ly participating in the inflamma-
-tory process going on in the system.
Its morbid manifestations are not
constant. sometimes its function are
abnormally accelerated. Then again
its action as far as can be observed
is almost suspended. The bile is gen-
-erally thinner and less viscid than
in a healthy state. sometimes of a
dark or dirty whitish color [illegible] re-
-taining its normal color. These
changes and processes before describ-

-ed are constant in Typhoid Fever and while there are in different cases many other signs still they are not constant and uniform enough to enter into the description of this disease

Symptoms

The invasion of Typ[illegible]

[illegible]

the majority of cases is insidious. [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Frequent sponging of the body with

to be given
20 gtts in
every hour or two. Stimulants and
nishment may

be carefully noticed, and care
should be exercised in using
[illegible] kidneys broken at this work
of elimination. Should the bladder
become distended with urine the
catheter should be at once emp-
-loyed and the [illegible]
submitted to a careful [illegible]
[illegible]
-ies. A favorite remedy is a poultice
of Digitalis [illegible]
[illegible]. [illegible]
attention should be [illegible]
[illegible] of the room and clean-
-ness of the bed and patient. The
fecal and urinary discharges should
[illegible]
and the vessels disinfected. [illegible]

[illegible] to the [illegible]
[illegible] competent physician and
he only who is constantly endeav-
-oring to [illegible]
the sufferings of his [illegible]
is worthy of the confidence and
respect due to the members of
[illegible] profession.

Respectfully [illegible]ted.

[illegible]

The Monument

of

National Labor

Management of Natural Labor

The physician in the practice of Medicine should attend strictly to his professional duties and answer promptly all calls pertaining to the practice of Medicine and especially to all Obstetric practice.

It is my object in this Thesis to try and point out some of the duties of the physician in the practice of Midwifery. he will often to his great annoyance be called to the bedside of his patient long before labor has commenced but he should always attend promptly, for although in a great many cases this is true, still yet he will have an opportunity to detect anything abnormal at an early period.

upon our arrival at the house we should
not intrude too abruptly into the presence of
our patient but should make our presence
known as quietly as possible for fear of
arresting the progress of labor, on enter-
-ing the chamber we should endeavor to
draw our patient and her attendants
into a conversation on some subject
on the general topics of the day, this will
give you an opportunity to watch the
frequency, duration and regularity of
the pains, from this observation we may
base our future course, after we
have thus made the acquaintance of
our patient and her attendants we must
commence to make an examination, in
proposing this especially in women who
are in labor for the first time we should

never forget the consideration which is due the feelings of the patient & the ... in her rank in life for it must be otherwise than that a woman must look upon such an examination as is necessary by a person of the opposite sex with repugnantion if not with abhorrence. but if the necessity be first explained to her in a few kindly words she will rarely fail to appreciate the good feelings that prompts them and will submit without a murmur to whatever you may deem necessary for her comfort and safety.

In making an examination it is necessary to have the patient in a convenient position and the one usually preferred in this country is on the left side with the back to the physician.

and near the edge of the bed for the
sake of convenience but sometimes we
find a patient that can neither lay on
the left nor the right side then it is
necessary to allow the patient to lay in
the position that is the most comforta-
ble to herself after we have the patient
in the most convenient position (which
is the one first mentioned) we proceed
to make our examination, the index fin-
ger of either hand (some prefer the right
and some the left hand) should be well
oiled with some unctious substance and
answering very well it is passed over
the perineum and gently entering
the vagina it is passed up to the Os
uteri, it is usual to select a period of
pain for the examination but if so the

finger must rest quiet in the vagina untill the pain has subsided for fear we should rupture the membranes and evacuate the waters, what we are to learn in this first examination is of great importance in our future management of the case we should ascertain if the Os is soft and dilatable or rigid and unyielding and to what extent it has become dilated if at all, we observe if the membranes have ruptured and whether we have to deal with a natural presentation and if there is any pelvic deformity or prolapse of the cord, and we also learn if the vagina is soft and relaxed and well lubricated with mucus. If we find the parts all in a state of relaxation and well lubricated

with mucus and a natural presentation we may rest easy for the time but on the rupture of the membranes and the evacuation of the waters we should make another examination for the purpose of more surely than before to determine the presenting part or prolapse of cord if we find on this second examination everything as it should be we should inform our patient of the fact but the physician should be very cautious how he expresses his opinion on this subject the young practitioner should avoid making to frequent examination as it is calculated to remove the lubricating medium and to irritate the parts and have an impression on the minds of the patient and her attendants that he does not fully understand the case and may cause

Some occasions in their minds and
Seriously interfere with the progress
of the labor and probably convert a nat-
ural labor into a lingering & instru-
mental labor.

There is certain articles of
the physicians armamentarium that
he should look upon as indispensable and
he should never leave his office with-
out a patient in labor without. These con-
sist of an elastic catheter Opium in
some form I should prefer the Sulphate
of Morphia (although some authors rec-
ommend other preparations of the drug)
and a quantity of the Fluid Extract
of Ergot this he should never be with-
out Bromide of Potasa and Chloroform
and if he is going any distance

take the forceps although I consider this unnecessary for the reason that he must generally have plenty of time to send for them if they should be needed. The physician should always carry with him some coarse linen tape for ligating the cord and a pair of blunt pointed scissors for separating the child from the Mother he should also give a general glance around the room to see that all is in readiness and that everything is provided that is necessary for the comfort and safety of his patient. He should see that the nurse (if there is one but in a country practice you rarely find one) has a supply of sanitary towels napkins and abdominal binders. On the appearance of

the termination of the first stage of labor the pains usualy become more severe it is then advisable for the woman to go to bed. previous to this however we should see that the bed is prepared this should be neither to hard nor to soft but made as comfortable as circumstances will admit upon this should be spread a piece of India rubber sheeting, and a sheet folded to about three feet in width plan across that part of the bed upon which the pelvis of the woman lies as the liquor amnii and other discharges escapes this sheet may be pulled through and by this simple arrangement our patient will have a dry bed to lie upon and upon the termination of the labor the sheet may be removed with final discharges

and the patients clothes being pulled down which has been previously rolled up for the purpose of keeping them dry she will be left as comfortable as could be expect=ed under the circumstances upon the rupture of the membranes and the evacu=ation of the waters we should make an examination as stated above and if we find everything as it should be and the pains regular and strong we may expect a speedy termination of the labor

The patient is usually encouraged to bear down before the rupture of the membranes and the evacuation of the waters this is unnecessary and should be forbidden as it is not only useless but injurious but as soon as the waters are evacuated the stage of

expulsion commences then we should encourage the woman to avail herself of the aid of the abdominal muscles. Most patients however will do this with-out any instructions whatever but some-times she will cry out and failing this we should prevent unless the pains are unusually severe by explaining to her the necessity of her making good use of every pain and not wasting her strength and powers by crying and hollering she will rarely fail to appreciate the good feelings that prompts this advice and avail herself of every possible means that is in her power to aid in the expulsion of her child, as the labor progresses and the head descends [illegible]

unfrequently that the anterior lip of the Os remains in an Oedematous condition this is caused by pressure of the head against the Symphysis pubis this we should endeavor to push up above the head by gently elevating it on the tip of the index finger in the absence of a pain and holding it until a pain comes on this is demurred to by some authors but I have done it in one case with perfect success, as the labor proceeds the head will come to press against the perineum then it becomes our duty to take our seat at the bed side, for the purpose of supporting the perineum but not as Dr Ramsbotham recommends where he says "place your elbow against

the bed regarding it as a fixed point and allow the perineum to be forced against your hand" but for the pur=pose of affording a gentle support by placing the palm of your hand, guarded for the sake of Modesty and cleanliness with a soft napkin over the perineum with the Index finger extending towards the Mons veneris along the Labia Majora and allow the perineum to be gently forced against the hand by this procedure we may direct the head of the child forwards towards the Symphysis pubis and by simply moving the finger we may watch the progress of the head during the Labor. as the labor proceeds the contractions become stronger and the pressure against the perineum greater. If the

should exceed the normal force so as to endanger the integrity of the parts we should direct all help to be removed and encourage the patient to cry out lustily during the height of a pain or in other words make free use of the safety valve of the glottis, at every pain the head of the child will advance and at the termination will recede and in this way will finally come to pass over the distended perineum at this period the suffering of the patient is intense but as soon as the head has passed the woman will experience great relief and express her feeling by words of praise or crying or laughing as she may feel inclined. as soon as the head has passed it is our duty to pass a finger around the

neck of the child to ascertain if the cord
is wound around it if so we should with-
-draw by means of the fingers and to
release it and if this is not possible we
should keep it as loose as we can to preve-
-nt any danger to the child from suffo
cation if we find the cord is not around
the neck we may wait for the uterine action
to resume and in a few minutes the
trunk will be born we should now place
the child in the most suitable position
as will enable it to breathe if respiration
does not commence immediately we
may excite it by blowing on the face
or a slap on the nates or tossing it
on the hands this procedure seldom
fails to excite the respiratory muscles
to action if it should fail [illegible]

must resort to the bath warm or cold
or alternately as the case may requ-
=ire this however will necessitate the
seperation of the child from the Mother
if the child should breath as soon as
it is born which is most generally the
case we may seperate it at once which
is done in the following manner viz
it is supposed supplied with cord and
scissors we place the first ligature
about two inches from the umbilicus
of the child and a second one about
one inch or one inch and a half from
the first and divide the cord between
the two ligatures the object of this
second ligature is to prevent the fur-
ther soiling of the bed linen. And in
case of twin pregnancies to prevent

the loss of blood and danger to the life of the second child, the child being seperated and handed to the nurse there only remains now to complete the third stage of labor the delivery of the placenta it is considered good practice to administer a full dose of the Fluid Extract of Ergot at the termination of the second stage of labor this insures from contraction of the uterus and prevents post partum haemorrhage, if we have followed the decent of the uterus with our hand upon the fundus externally it will not be long untill we find the placenta in the vagina but if it should not pass so readily we should avoid all pulling on the cord for fear of adherent

placenta and the danger of inverting the uterus we may wrap the cord around the finger of the left hand and use it as a guide to the A S and as a general thing we will soon be able to take the mass as a whole along with the membranes, when the placenta is slow in coming away it is a good plan to knead the abdomen with the open hands with the fingers towards the symphysis pubis which will rarely fail to excite the uterus to contraction upon the birth of the placenta there is always more or less haemorrhage but this should not excite alarm for there is always a discharge from the uterus the Lochia which should go on and continue for some days as long as the patients pulse

is regular and full we should not have any fears but a weak and quick pulse is indicative of danger. When we are satisfied with the contraction of the uterus and that there is no abnormal discharge escaping from the vagina we may proceed to make our patient as comfortable as circumstances will admit of. this we do by removing the sheet previously spoken of and arranging the bed as best we can. the abdominal binder has created considerable difference of opinion among physicians but not much among women for you will scarcely find a woman that is willing to do without the binder it is a belief prevalent among them that it aids materially in restoring

their former shape and I think myself that a binder properly applied does no harm if no good in this respect however I think we should humor our patient in anything that we know is not injurious to them but the binder is useful in other respects it supports the abdominal walls and probably aids in keeping the uterus in firm contraction. the kind of binder I prefer myself is one in the shape of the letter T this should be applied next the skin and it generally falls to the lot of the physician to apply it especially in a country practice when in fact he has nearly all to do that would fall to the lot of a good nurse, the binder should be drawn firmly around the body of the patient

and pined the advantage of the T shaped binder is that it can be brought between the thighs of the patient and aid in keeping the napkin in its place which should be applied after the termination of the third stage of labor this should be a soft dry piece of linen, applied over the vulva, after we have got through with attending to our patient and probably before we will be called upon by the nurse to dress the baby's navel this we do by taking a soft piece of linen and either burn or cut a hole for the stump of cord to pass through and we make a pad that will press over the umbilicus taking care to wrap the cord up in the pad in order to keep it off the abdomen of the child this done

the land should be applied we should
not however neglect our patient to long
at a time lest there should be a relaxa-
-tion of the uterine walls and we should
loose our patient from post partum
haemorrhage as long as we can feel
the uterus firmly contracted behind
the symphysis pubis to about the size
of a childs head we may rest assured
that there is not much danger from haemor-
-rhage the patient must be strictly en-
-joined to maintain the horizontal position
lest haemorrhage should supervene
it is hardly necessary to give the patient
any stimulants as the system usually
rallies in a short time if it is necessary
a little brandy in sweetened water will
generaly answer every purpose it is not

advisable for the physician to leave the house untill he is satisfied that there is no danger from post partum haemorrhage an excellent method to prevent this is to put the child to the breast early and furthermore this aids in drawing out the nipples if at the expiration of an hour the uterus is still firmly contracted and the pulse normal we may venture to leave our patient for the present with directions that she must not be disturbed or be allowed to raise up lest haemorrhage should supervene and with the promise to return in a short time,

Respectfully Submitted by
A. Bruce Barnette

Feby 1879.

A Thesis

on

Therapeutics.

Respectfully submitted to
"The Faculty of Physic" of the
University of Maryland.

By

Louis B. Hebeth.

Baltimore, Feb. 5th, 1879.

Therapeutics.

Introductory Remarks.

It may elicit a smile from the astute and veteran therapeutist to see a candidate for graduation in medicine take as a subject, and of which he proposes to elaborate a thesis, the one set forth above, namely: Therapeutics. Be that as it may, certainly it is a subject sufficiently general to furnish abundant material; sufficiently deep to call into requisition the fullest play of analytic acumen; sufficiently controverted, obscure, and contradictory in the exegetical efforts emanating from the mental laboratory of therapeutists in all ages, as to leave the writer in company with many who have been wandering in labyrinths of those

intricate ways they had no clear knowledge.-

On reading a synopsis of medical opinions, as elaborated by leading medical minds from Hippocrates down to Virchow, the student of medicine is dumbfounded at the mighty mass of conflicting theories confronting him with their various claims to his credulity; and, at the threshold of his medical career, he shrinks from entering a field where confusion runs riot, where chaos seems to reign, and where he must assume the fearful responsibility of dealing with human life.-

On the dark picture thus presented to the students mental vision, are there no forms of relief; no bright spots; no facts which have not only remained but brightened under the manipulations of the anatomist, the physiologist, the

pathologist, the chemist, and the therapeutist, whose labors have spanned the long interval of centuries? Yes; there are truths, facts coming down to us through the revolution of long years of earnest, tireless, patient toil, which, when collated and fastened firmly in the stocks of therapeutical science, arrest our attention, appeal to our judgment, defy the controversion of our logic, and command our assent by the accumulated testimony of authoritative experiment.

After reading the works of various authors on the subject of therapeutics, and being favored with a series of clear, logical, and admirable lectures upon the same subject from the "Chair of Materia Medica and Therapeutics" in the Medical Department of the University

of Maryland", it would be strange if the writer had formed no opinion or opinions of his own upon a subject where various theories disport their respective charms.

To a presentation of his views, the writer now addresses himself, pleading a patient hearing and a charitable criticism from all who may chance to peruse his feeble effort, seeing that it is a subject upon which some of the cherished maxims of the wise of past ages have been proven to be foolishness by the light of advancing medical knowledge.

Definitions.

Therapeutics is from the Greek Therapeuō, which signifies, "I wait upon, I alleviate, I attend upon the sick."

Such being the signification of the parent verb, the noun derived therefrom, and which gives name to a branch of Medicine, must partake of the specific idea inherent in the verb. Therapeutics, then, as applied to Medicine, is "that part of Medicine, which has for its object the treatment of disease". It is also defined, "the department of Medicine which comprises an explanation of the modus operandi of medicines". We thus have two features presented to our minds in the scope of therapeutics as a branch of Medicine, namely: First, the treatment of disease; second, an explanation of the mode by which medicines operate in the treatment.

The Argument.

From the above definitions, it

follows that the physician who, through remedial agents, treats disease, is a therapeutist; but it is equally evident that he is not an intelligent therapeutist unless he knows *what* his medicines will accomplish, or ought to accomplish, towards curing his patients. I have not said that he should know the *modus operandi* by which his medicines accomplish their work, in order to be an intelligent therapeutist. I did not say so, because it would be demanding of the physician a *measure* of intelligence not warranted in the present state of therapeutical science. The fact is, that enlightened experience and careful observation in the use of medicines in various pathological conditions, have been the means of accumulating a vast fund of *clinical* knowledge respecting

the curative properties of many medicines, whilst the modus operandi of the medicines in bringing about the cure has remained in obscurity, or has been the subject of conflicting expository efforts.

Of what advantage, then, are the researches of the scientific therapeutist? Much in every way; for his researches, taking clinical facts as the point of departure, may bring to light the hidden laws of medicinal action, and thus either narrow or widen the range of, or fix in their proper sphere, remedies which seem to be vacillating in their therapeutic scope. Already some valuable remedies have attained, apparently, their proper sphere through the channel of scientific investigation chiefly, and afterwards confirmed by clinical experience.*

* eury and opium, for instance. Scientific experimentation reversed these agents in their therapeutic scope; narrowing former, and widening the latter. This is especially so inflammatory conditions.

Unfortunately for the theoretical therapeutist, and the cause he espouses, clinical experience in so many cases does not bear out the antecedent theory respecting the modus operandi by which a given remedy will work a curative result; and hence the antecedent theory, respecting the ability of the given remedial agent to meet and overcome the pathological condition, is subjected to a degree of ridicule not comfortable to the promulgator of the theory. This lamentable failure of a priori theory and after clinical experience to harmonize, has led many physicians to rely chiefly upon blind empiricism; and others (wiser ones) to trust solely to the "enlightened empiricism" of clinical observation. Now, it seems to the writer that, if therapeutics must rest solely upon the so-called "enlightened em-

icism" of clinical experimentation, humanity must suffer seriously in the working out of such a system. It seems more reasonable and safer to combine antecedent theory* with clinical observation; and, with these mutual safe-guards, establish a rational system of clinico-scientific therapeutics. The truth is simply this: Well authenticated clinical facts respecting the curative properties of medicines, are of infinitely more value to the physician, than any theory of the modus operandi by which the medicines are supposed to effect a curative result; but, that when theory and clinical facts harmonize, science obtains a triumph, and the physician thus enlightened is doubly armed.

* That is, a theory respecting the therapeutic scope of a remedy, derived from its physiological action upon the organism of the healthy animal. Through scientific experimentation.

Stahl characterized the materia medica of his day as a "stable full of offal." Sydenham complained that "practice was pestered with too many eminent remedies". Bichat declared that we possessed little positive knowledge respecting the action of remedies.

Whilst these observations were, doubtless, true in the days of these eminent men, they are not equally true in our days; for much of the uncertainty of the action of various remedies has disappeared under the enlightening influence of modern advancement in physiological and pathological knowledge, together with therapeutical experimentation under the light thus evolved. Sauvages deemed physiology and pathology "vain amusements of the mind." But

what, by him, were deemed "vain amusements", have furnished to some extent already, and are more fully destined to furnish the solid and enduring foundation of a system of enlightened therapeutics.

To illustrate the preceding principles, we will employ a few propositions and corollaries; one selected, and the others formulated by the writer.

1. Prop.- "All pathology is but the physiology of organic perturbation" (Hawthorne).

Corollary.- It follows that a system of sound therapeutics must rest upon a full and clear knowledge of physiology and pathology.

2. Prop.- The internal harmony of the organism, when in a pathological

state, is always towards recovery.

Corollary.- Violent interference with pathological conditions which are under the control of the vital forces, is never justifiable.

3. Prop.- Recovery from organic perturbation is always effected by the vital forces, either unaided or aided by proper remedial measures.

Corollary.- Remedies, of themselves, are not curative of disease, but merely auxiliary to the reparative forces of the organism.

Our first proposition may be proven thus: Physiology, in its totality, is the synonym of aggregate organic function. A pathological state of the organism cannot exist without perturbation of organic

function. I.e. refer, "all pathology is but the physiology of organic perturbation".

Our second proposition is susceptible of the following proof: If the inherent tendency of the organism, when in a pathological state, is not towards recovery, it must be towards death. It cannot be towards death; for, if so, owing to the complexity of the organic structure, death must result, in all cases, in spite of remedial management; and health could not be maintained under the most favorable circumstances. Therefore, the inherent tendency of the organism, when in a pathological state, is always towards recovery. This second proposition is the only one that seems to be weak. I say seems to be weak;

for it is not weak. An apparent weakness arises when our proposition is confronted with the well-known fact that a pathological state of the organism is often consummated in death; and, for this reason, it may be retorted, "the tendency is often towards death". The person so retorting has either not weighed the language in which our proposition is couched, or else he is deficient in critical acumen. It must be discriminated that the tendency towards death is not organic, but one born of the morbific cause, which tendency is always towards death, as the organic tendency is always towards recovery or normal physiological action. It is the conflict between these two tendencies that the physician

must balance in his mind, in order that he may reinforce the organic tendency, if possible, by reserves in the shape of well-chosen remedies and the application of approved hygienic measures. The truth is that our proposition can not be disproved, unless it can be shown that <u>disease</u> is as much the <u>normal</u> condition of the organism as <u>health</u>.

Our third proposition may be proven thus: If recovery is not effected by the vital forces, it must be, if at all, through the remedies employed. But it is a settled fact that remedies, of themselves, can never restore a diseased organism to health. Therefore, <u>recovery</u> is <u>always</u> effected by the <u>vital forces</u>, either unaided

or else aided by proper remedial measures.

Our corollaries, of course, stand or fall with our propositions.

It has not been my intention to write anything explanatory of the second phase of Therapeutics, namely: "An explanation of the modus operandi of medicines". I cannot, however, pass on to my concluding observations without presenting a few brief remarks upon this second phase of my subject.

Medicines act in three general ways, to wit:- 1. Mechanically; 2. Chemically; 3. Vitally.

The first way may be illustrated by the mechanical anthelmintics, such as doliches pruriens, and kindred remedies. The second is illustrated

in the action of sulphuric acid, caustic potassa, and kindred agents in the destruction of a tissue by extracting its water and decomposing it; also by the action of alkalies rendering the urine alkaline. Examples of the third are found in aloetic and opium stimulating nervous function or activity; in tobacco and veratrum viride depressing it; in turpentine and kindred remedies exciting the cells of the kidneys and lungs.

The vital action of remedies is, by far, the most controverted, the most frequently demanded, and the least understood. It is in this action of remedies we meet with most disappointment. Often, from our knowledge of the physiological action of a remedy,

we are led to hope for good therapeutical results, only to meet with a sore disappointment through negative results or positive harm. Even remedies whose vital action is seemingly well established by the testimony of clinical experience, and where the indications for their use seem clear and explicit, we fail to get a favorable therapeutic response. Why is this? Either our diagnosis of the character of the pathological state is defective, or constitutional peculiarities of the patient render the remedy inactive or hurtful in that particular case, or else that the remedy is unstable in its therapeutic scope. How much, then, depends upon a correct diagnosis, a clear interpretation of symptoms, and a judicious selection of our remedies!

But all is so dark in Therapeutics. Physiology and pathology, as sciences, are, as yet, scarcely free from the trammels of swaddling clothes; and so very much depends upon them in order to give stability, fixedness to the principles of therapeutical science. Light and facts are urgently demanded.

Remedies are said to act directly and indirectly. That is, most remedies have an affinity for certain organs or tissues, and thus spend the force of their action upon such organ or tissue; whilst, owing to the bond of sympathy existing between the various parts of the organism, the entire system feels the effect of the direct action. The effect produced upon the related organ or organs by the direct action of the

remedy, is called the "Primary effect". The effect produced upon the system in consequence of the direct action, is called the "Secondary effect". We may give as an example of these two effects of remedies, a diuretic to remove a dropsy. In this case (selecting a remedy whose direct action is on the kidneys) the kidneys are excited, by which action the watery element is extracted in excess from the blood. This diuresis is the primary effect. The blood, in consequence of having parted with an undue proportion of its watery element, and the resultant increase of its density, is forced to take up the effusion in the cellular tissue, and the dropsy is removed. This absorption and removal of the dropsy is the secondary effect.

The secondary effect is quite frequently called for. However, as before stated, I have not proposed to enter into an extended discussion of "the action of medicines"; so these few remarks must suffice on that phase of my subject.-

Concluding Observations.

Since we have very few specifics in our store-house of therapeutic agents, we are forced, in most cases, either to reject drugs entirely, and depend upon nature and hygiene; or we must employ the dangerous "tentative" practice; or else the safer "expectant" line of treatment,- that is, must and endeavor to control the symptoms as they arise. Of course we always try to remove the cause of the disease; but the cause is frequently unknown.

The removal of the cause is often the cure. It is always so, unless the vital force of the organ or organs affected has been so much lowered that there cannot be proper reaction.

The expectant method of treating disease is the most difficult of all methods to practice. In this method there must be no violent interference unless the character of the symptoms demand it. It is not simply trusting to nature and hygiene; it is that, and more. It is a careful watching of the pathological workings of the organism, anticipating dangerous complications, and supporting the waning life-force of the organ or organs suffering. To do all this without producing harm to the patient by our

medication, requires the highest skill, the most consummate ability to interpret symptoms aright, and a clinical discrimination in the selection of remedial agents. The skill demanded is so high that few physicians pursue a true & speedy course. They either institute a blind, active interference, or else they leave all to nature and hygiene.

Finally, since "all pathology is but the physiology of organic perversion"; and since the inherent tendency of the organism, when in a pathological condition, is always towards recovery; and since remedies, of themselves, are not curative of disease, - why should we not trust to nature alone, under good hygiene, to work out a restoration to health? He have a school of prac-

titioners who virtually do this; who, by attenuating their remedies until the most delicate chemical test can scarcely (if at all) discover them, are thus forced to rely upon nature and hygiene for curative results. I refer to our "homeopathic" brethren. They claim to be more successful with their infinitesimals, than we are with our more extensive quantitative use of remedial agents. Their claim, if true, establishes one of two things:- Either that nature, under good hygiene, will effect more cures, than when active medication is employed; or else, that active medication is often misdirected, and thus more readily aids the materies morbi than it does the vital forces in the curative effort. My own judgment is that

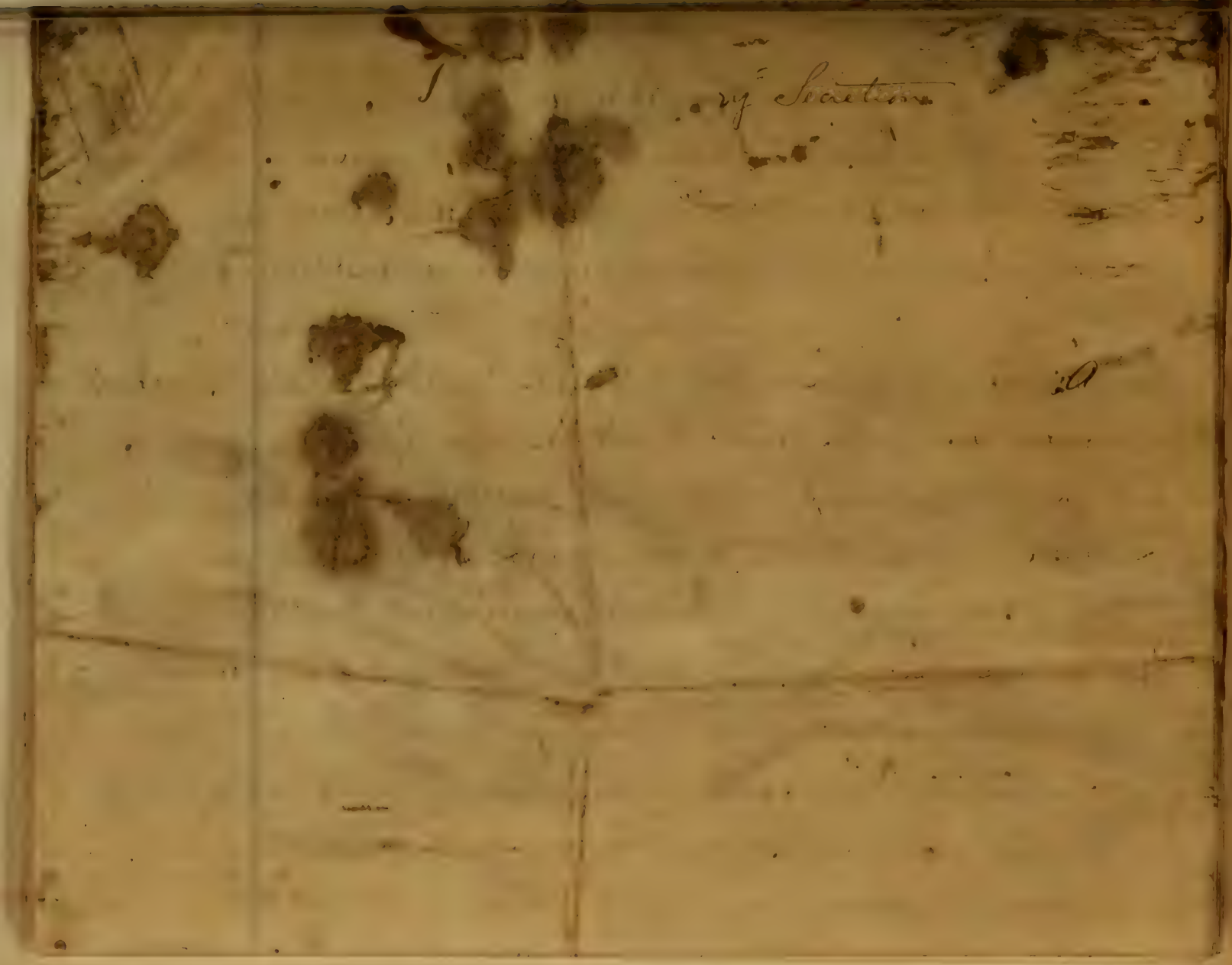
medicines, or drugs, are dangerous agents in unskillful hands; and, in such hands, often work harm where good is intended. What we need, then, is a clear comprehension of the therapy of our remedies, and skillful hands to employ them. No physician can be considered skillful in the treatment of disease, unless he has acquired, by his own experience or from that of others, a comprehensive knowledge of the curative range and incompatibilities of the remedies he employs. And, since a diagnosis of the character of the disease to be treated, depends (either with or aside from his own clinical experience) upon his physiological and pathological knowledge,- he cannot, a priori, be claimed to possess a skill in the remedial man-

agement of diseased conditions of the physical organism, unless he be well versed in those two branches. Our answer, then, to the question propounded at the head of this paragraph, is, that medicines should always be employed whenever they will aid in the restorative process. Though the vital forces may, of themselves, under good hygiene, in a vast majority of cases, overcome disease; yet it may be at such a fearful sacrifice of the vital energy, that a foundation may be laid for the easy developement of those diseases which depend upon lowered vitality to favor their initiation. Besides, there are diseased conditions in which the materies morbi is present in such strong force, that the vital

forces are completely overpowered. In such cases remedial aid is urgently demanded to prevent, if possible, a fatal issue.

Therefore, hear the conclusion of the whole matter:- A judicious application of medicines, or drugs, to diseased conditions of the organism, as aids to the vital forces in throwing off the materies morbi, and effecting a restoration to health, is, in all cases, eminently wise and highly conservative of the Vital Economy.

Louis H. Veith.



A Thesis

On

The Salivary Secretion

by

H. R. Carter M.

1879

Thesis

On

The Bird

By

Milton B. Dick.

Martinsburg W. Va.

Feb 3rd 1879

The Heart.

animal, for

[illegible] and [illegible]
[illegible]
[illegible]
[illegible] The [illegible]
obtained as it exists in the
[illegible], but we can obta[illegible]
in a coagulated [illegible]
[illegible] freshly drawn [illegible]
[illegible]
[illegible]
takes place it is bound [illegible]
the [illegible]
it has entangled with it [illegible]
[illegible]
of the blood; [illegible]
[illegible]
[illegible]
[illegible]

[illegible] if it exist there in all
that it is in a quantity [illegible]
all we cannot detect it;
veins near the heart with
[illegible]
[illegible]
[illegible]
bitious substance.
[illegible]
not seem it take an essen-
tial part in the [illegible]
[illegible]

of the body it is found to be
of a semisolid consistency and

1879

authors, although the

son of year; two thirds of ca

ses occur in winter and spri

ore frequent

... ature.

occurs at all period of life

authenticated

ted to conclude

[illegible] solidification [illegible]

better conductor of sounds than

[illegible]

[illegible] distinction [illegible]

[illegible] complete [illegible] has not [illegible]

[illegible] the caseous rale will be [illegible]

red into this stage. In some cases

[illegible] never entirely absent after [illegible]

[illegible]

[illegible]

[illegible]fication has occurred.

3rd Stage.

[illegible]

stage [illegible]

[illegible]

[illegible]

[illegible] resonance, which is followed

by the normal sound.

[illegible]

the place of the Bronchial rale [illegible]

[illegible]

[illegible]

[illegible]

[illegible] more often the cubrepitant [illegible]

If resolution does not take place the [illegible]

[illegible]

[illegible] victorious march over
[illegible] battle field
Can the disease be aborted in all
[illegible] stage before hepitization [illegible]
[illegible]
[illegible]
[illegible] in time I would resort to the
[illegible]
[illegible] I shall
[illegible] note down the symptoms
[illegible]
[illegible]
the conditions are much the same
[illegible]
[illegible] that I believe [illegible]

[illegible]

[illegible] by the [illegible]

[illegible] the body can [illegible]

[illegible] in every case, where the

temperature called for it

[illegible]

[illegible]

[illegible] frequently renewed and with

[illegible] less inconvenience both to

[illegible]

[illegible] method of [illegible]

[illegible] direct [illegible]

[illegible]

[illegible]

[illegible]

which it would be justifiable

[illegible] the order you become the [illegible] Aconite you will prescribe [illegible] your experience with the drug [illegible] dies with my own, you will [illegible] doned its use all together [illegible] before you have reached my age
I believe the medicine requires great care and discrimination in its use, but this is true of most [illegible] medies and it has often been [illegible]
[illegible] is the same here as [illegible]
[illegible] with the stomach [illegible]
[illegible] rarely [illegible]

[illegible] a full dose [illegible] of blood [illegible] the [illegible]

Complications, intercurrent dis[illegible] sequelae will require the same treatment they call for when existing alone, with modifications to suit the circumstances.

Expectorants - These I have no hope of rendering any good [illegible] need [illegible] little about [illegible] [illegible] of the [illegible] [illegible] that the [illegible] This mistake has been [illegible] [illegible]

[illegible]

his own guides, judgment [illegible]

[illegible] all things

Tonics will find their place [illegible]

in the treatment of most other

depressing [illegible] disease

[illegible]

treatment of the disease though

much more might be added

with respect to the particulars of

meeting the indication [illegible]

[illegible] if we remember that [illegible]

cases are alike in all their [illegible]

[illegible] and [illegible] must be treat[illegible]

alike. Let [illegible] remember

that [illegible] treating a sick [illegible]

[illegible] disease

Thesis

"Putrefactive Germs in Surgery"

Respectfully submitted to the

Faculty of Medicine

of the

University of Maryland

by

Joseph F. Tearney

of W. Va Feby 14th 1879

Putrefactive Germs in Surgery

The medical literature of today presents a strong contrast with that of a half century ago. Theories of the pathology diagnosis and treatment of disease that then seemed to our fathers' eyes all beautiful and plausible, have given way to sounder views established on more scientific grounds and verified by actual clinical experience. There is scarcely a single subject within the entire scope of medicine which has come from beneath the hand of the modern investigator unmodified and unchanged, and with the removal of these errors has medicine been rescued from the charge of empiricism and raised to the rank of a true Science.

Before the bar of recent inquiry the subject of Spontaneous Generation

has in its turn been subjected to the crucial tests of experiment & investigation Although this is the battle ground upon which scientists have warred from the first dawn of scientific culture, it was not until the parasite was shown to be unquestionably involved in the causation of certain forms of disease that the current of medical thought turned in this direction - then it was that the vast practical moment of this subject was realized in its fullest force and then it was that those investigations were undertaken which have proven it to be one of surpassing interest and boundless importance - The medical profession however cannot claim that all the

light recently shed upon this subject originated within the pale of the profession itself; for since its recent renewal by involving the doctrine of Evolution as its logical antecedent it commands the consideration and examination of all thinking men.

The organisms regarding which the idea of spontaneous generation has been ascertained are those whose natural history is wrapped in obscurity & whose minute size defies the reach of the microscope. Here then we have an discussion engaging the master-minds of the age concerning an agent "so low in the scale of being" as Dr. Wm. Budd says "that the mildew which springs up on decaying wood must be considered

high in comparison". As regards these low forms of life the world is divided and has for a long time been divided into two parties — the one affirming that we have only to submit absolutely dead matter to certain conditions to evolve life from it — the other affirming that in our day life has never been found to arise independently of preexisting life. It is the object of this paper to set forth in a feeble manner the arguments adduced by that party which claims life as a derivative of life, insofar as they pertain to putrefactive change.

It is a fact of common observation that if solutions of animal or vegetable matter admission

character be exposed to the air they will soon swarm with countless millions of microscopic vegetations - These have received the name of Bacteria - For the exercise of their activity special conditions are required as the presence of atmospheric air or of an oxygenized fluid - a certain degree of moisture - a moderately elevated temperature - a given quantity of albuminous matter - The presence of these conditions enables the Bacteria to perform their mission - the removal of all or one of them blasts the vegetable life and organic decay is arrested - The uniform presence of these vegetations in putrefaction & the fact that the conditions of ordinary life are required for the pre-

to go on are circumstances that point to them as the active agent. This established the question arises as to whence come their vegetations. On the one hand we are told to believe that a reservoir of force more potent than the Sun itself is stored up in that filthy mass of effete albumen that it is capable of originating life. On the laboratory of the other party worked out by rigid inquiry and laborious research we find his answer to the question. He will show us action attended with result in accordance with Physical laws - fixed - unvarying - yet explainable - effect following cause in an uninterrupted rhythm. He will tell us that in the air lurk millions of atom - like particles and that these

are the germs which people the decaying mass with Bacteria. Let us then peer into that air which he grasps with such cool confidence of success & see if we too can find in it an answer of this problem-

"The sun" says Daniel Culvermell, "discovers atoms though they be invisible to candle light and makes them dance naked in his beam! A single ray of light stealing into a darkened apartment betrays its path by illuminating the dust floating in the air. The investigator in this field of labor accordingly captures that sun-beam to aid him in his inquiry- If that prove too feeble in the electric light he has an agent which will meet his every requirement-

The air to be examined is received in a large glass bell-jar, after having passed through two bent tubes connected with it, where it is robbed of its carbonic acid - its moisture and various impurities by means of Sulphuric acid and glass placed in the one tube and caustic potash in the other. A ray of sunlight allowed to enter the room discloses its route - as it does when passed through the bell jar - here its track is still illuminated by suspended mechanical matter. It has therefore eluded the amount set for it in the bent tubes. If before entering the bent-tubes the current of air is carefully passed over the tip of a spirit-lamp or flame the suspended matter no longer appears nor does of

when previously passed through a platinum tube heated to dull redness. It is therefore combustible, in other words organic matter. Again, let us place the ignited spirit-lamp in a cylindrical beam that betrays its track in any dark apartment. Within and around the flame we see circles of darkness blacker than the blackest smoke that ever issued from the funnel of a steamer. Draw the lamp below the beam and the same gloomy masses whirl upwards. The resemblance to smoke is wonderfully striking, but is it smoke? A red hot poker placed beneath the beam gives rise to the same phenomenon – a large hydrogen flame is next employed and the same dusky shadows shoot upwards.

Smoke is therefore out of the question
It is blackness resulting from the ab-
sence from the track of the beam of all
matter competent to scatter light. When
placed below the beam the flame
destroyed the floating matter in situ -
the air freed from this matter welled
upwards into the beam pushed aside
the illuminated particles and substi-
tuted for their light the darkness due
to their own perfect transparency. The
beam then passed through our exper-
imental tube filled with motionless air
or with Nitrogen Oxygen Hydrogen &
Carbonic acid so prepared as to exclude
all floating matter needs nothing within
to scatter light and is not seen; on
either side of the experimental tube
the thick strewn particles stand out

like a luminous solid under the influence of the illumination - This organic matter is thereby visible. Now let us see if any connection exists between the power of the atmosphere to scatter light and its power to produce life - or in other words whether the visible organic particles existing in it are not putrefactive germs - We think they will be found to go hand in hand -

It has been ascertained that to render air optically pure it is only necessary to imprison it for a certain time in a closed vessel - The light - scattering matter gradually attaches itself to the inner surfaces of the vessel so that a beam of the most concentrated power sent through such air fails to make its track

visible - Advantage is here taken of this fact as being more satisfactory and convenient, in conducting this inquiry - A chamber of suitable size is constructed the sides top and bottom being of wood, A window frame is inserted into each side so as to be face to face - Through the wooden bottom several holes are made into which are fitted air tight as many test tubes to contain the matters to be subjected to experiment. The shank of a pipette passes through a similar opening at the top so adapted as to admit of free lateral motion yet perfectly air - tight Through this pipette at the proper time the test tubes are supplied - Two smaller openings at the top are closed air - tight

with the open ends of two small tubes which connect the inner space with the atmosphere. These are bent many times up and down to increase the surface and thereby augment the resistance to the passage of a current from without inwards and to insure the interception of particles carried by such currents. They provide for the exit of aqueous vapor generated during the boiling of the contents of the bottom test tubes. The boiling is intended to destroy any seeds of putrefaction that may have made their habitat in the experimental matters previous to its introduction into the chamber. It will be observed that at every step special precautions are taken to protect the air within

the chamber from the influence of the atmosphere - The chamber is now closed and a searching glare of electric light shot through it from window to window. Within the area of this light hang clouds of dust as clearly defined as mist on the hill top. We have not attempted to isolate these clouds but so surely as the sun can chase the mist from the mountain side, so surely can we drive out of the chamber every particle of this dust - But it is not our intention to meadle with this dust - we propose to let the air dispose of it as best it may - after three days the searching beam is again invoked. Its track is traced on each side - within the case it is

last - Three days then had sufficed for the air to winnow, so to speak, the floating matter out of itself - this it does by depositing it on the walls which had been previously varnished with glycerine for this purpose - The test tubes are now filled through the pipette and the organic matter so introduced is exposed, after being boiled, to the action of the motionless air
We have here then the Oxygen Nitrogen Carbonic acid, ammonia, Aqueous vapor and all the other vapors which mingle more or less with the ordinary atmospheric air, but self-cleansed from suspended mechanical matter.
2ndly. Can air so cleansed produce putrefaction - To this both the animal and vegetable worlds return a decided

negative. Infusions of any animal or vegetable substance when exposed to our ordinary atmosphere are invariably swollen with putrefaction in from two to four days. Placed at the highest mountain top or at the level of the sea the result is invariably the same. In the motionless air of our experimental chamber on the other hand the same infusions remain for months without manifesting the least sign of Bacteria or of undergoing the associated phenomenon of putrefaction. The power in the air of developing such life and of scattering light are thus shown to be inseparably connected. After having enjoyed this immunity for months the opening of our window will again

throw the infusions at the mercy of the moto laden air, so that in a few days they will become putrid and rampant with life.

We are as strongly convinced of the existence of these particles in the air as if we could feel them between the fingers or see them with the naked eye. Let us suppose them to augment in size until they come within range of the senses. Let us suppose also that our knowledge of them is as defective as it is now - that we dont know whether they are grosser dead dust or mineral matter. Let us provide a flower pot filled with nutritious earth and into this drop the particles. Assuming that in course of time any ivy springs from that

soil and shoots its tendrils about our room – or that a fragrant rose blooms there. Assuming that every repetition of the process yields the same beautiful result what would be our conclusion? Would we regard these lovely flowers as the product of dead dust or mineral matter? Assuredly not. We would believe them to be the offspring of living seeds – we would believe that the particles sown in the flower pot were unquestionably the seeds of the plant flourishing before us. It would be absolutely ridiculous to suppose they had been spontaneously generated. This chain of reasoning is without flaw and it can be applied link by link to the development

of Bacteria from that floating mass which the electric beam reveals in the air, and in the absence of which putrefaction is unknown.

Surgical science has sought guidance from the Germ theory and upon it is founded the antiseptic System of Professor Lister of Edinburg. The illustrations of this theory are of much moment and their introduction here is deemed advisable - those at least adduced by Prof Lister. He says "in order to guard against the access of air in the treatment of large chronic abscesses we used to draw off the matter by means of a trocar and cannula. The instrument dipped in oil was thrust into the cavity of the abscess the trocar withdrawn and the fine flowed out

through the canula care being taken to prevent the possibility of regurgitation by gentle pressure over the part. The canula was then drawn out with due precaution against the reflux of air. This method was frequently successful as to its immediate object the patient being relieved from the mass of accumulated fluid and suffering no inconvenience from the operation. But the fluid was pretty certain to accumulate in course of time & it became necessary again and again to repeat the process. And unhappily there was no absolute security of immunity from bad consequences. However carefully the procedure was conducted it sometimes happened even though the puncture seemed healing by first intention that feverish symptoms

declared themselves in the course of a day or two and on inspecting the seat of the abscess the skin was perhaps seen to be red implying the presence of some cause of irritation, while a rapid re-accumulation of the fluid was seen to have occurred. Under these circumstances it became necessary to open the abscess by a free incision when a quantity large in proportion to the size of an abscess say a quart of pus escaped fetid from putrefaction. Now how had this change been brought about? Without the germ theory I venture to say that no rational explanation of it can be given It must have been caused by the introduction of something from without. Inflammation of the punctured wound even supposing it to have

curred would not explain the phenom-
enon. For more inflammation whether
acute or chronic though it occasions the
formation of pus does not induce the
putrefaction. The pus originally evacuated
was perfectly sweet and we know of
nothing to account for the alteration
in its quality save the introduction
of something from without. And what
could that something be? The dipping of
the instrument in oil and the sub
sequent precautions prevented the en-
trance of Oxygen - Or even if you allowed
that a few atoms of the gas did enter
it would be an extraordinary assumption
to make that these could in so short
a time effect such changes in so large
a mass of albuminous matter. Besides
the pyogenic membrane is abundantly

supplied with capillary vessels through which arterial blood rich in oxygen is perpetually flowing; and their can be but little doubt that the pus before it was evacuated at all was liable to any action which the element might be disposed to exert upon it. On this theory then the putrefaction is inexplicable. But if the Germ Theory be admitted the difficulty vanishes at once. The canula and trocar having been lying exposed to the air dust will have been deposited upon them and will be present in the angle between the trocar and the silver tube & in that protected situation will fail to be wiped off when the instrument is thrust through the tissues. Then when the trocar is withdrawn some portion of this dust will naturally remain

upon the margin of the cannula which is left projecting into the abscess and nothing is more likely than that some particles may fail to be washed off by the stream of out flowing pus but may be dislodged when the tube is taken out and left behind in the cavity. The Germ Theory tells us that these particles of dust will be pretty sure to contain the germs of putrefactive organisms & if one of such is left in the albuminous liquid it will rapidly develop at the high temperature of the body and account for all the "phenomena".

Believing then that the atmosphere is the universal medium of contagion Professor Lister was led to elaborate his theory of Antiseptic Surgery. The objects he aims at may be briefly stated

follows 1st To destroy any germs of putrefaction which may have been accidentally implanted in the wound before it is dressed, or to guard against any such implantation, 2 Never to allow the access of air to the wound, except filtered through the antiseptic, 3 To provide for the drainage of decomposable fluids from the wound, without admitting to it the entrance of unfiltered air. The first indication is fulfilled if the wound is not a recent one by sponging it out with a solution of Carbolic acid (which is particularly deadly to the germs) of the strength of about one part of acid to forty or fifty parts of water - or in an operation by showering upon the exposed surfaces and

filling the air with a cloud made by pulverizing this solution in a spray producer. As it is necessary that every tissue laid bare by the knife should be protected from the germs the knives, saws, forceps, needles, & all other instruments used in the operation, as well as the oils and even the hands of the operator & assistants should be freely carbolized, The second indication - the prevention of the access to the wound of unfiltered air - is accomplished by enveloping the exposed part in a medium saturated with carbolic acid & taking care that this medium shall offer a surface sufficient large to prevent the entrance of any air that has not been thoroughly subjected to the

purifying influence of the antiseptic -
The wrapping most often made use of is known as antiseptic gauze - a light cloth of open texture impregnated with a mixture of Carbolic acid, resin and paraffin - in which the resin serves as a vehicle for the acid while the paraffin is added to prevent adhesion between different parts of the gauze -
Another serviceable mixture for saturating the gauze is the following -

Boiled Linseed Oil	℥iv
Yellow Wax	℥ii
Rosin	℥iv
Spts Terebinthina	℥viij
Calberts Carbol. Ac. No 2	℥ij

Several layers of the gauze thus prepared are wrapped about the wound and then are covered by a light mackintosh

cloth which covers the outside on all sides so as to prevent the discharge from saturating the gauze and thus effecting direct communication with the external air. In order to avoid the irritation which will result from contact of stronger solutions of Carbolic acid with the raw edges of the wound - it is advised to prevent this by covering them with a piece of silk dipped in a weaker solution of the acid. In addition to the defence thus accomplished, the implantation of fresh germs which might by some chance have penetrated through the dressing is also guarded against. When it becomes necessary to change the dressings a wise plan and by far the safest is to surround the outside

with the carbolized spray and to exercise in every regard the precautions adopted in the first instance.

The Third indication - drainage without admittance of unfiltered air is effected by insertion into the wound in the most convenient place of a drainage tube which must not project beyond the dressing further than the dressing otherwise it would convey undiluted atmosphere to the wound.

Whenever these three requirements have been exactly carried out this method of dressing wounds has been attended with the most satisfactory results. In hospital practice it is especially satisfactory. Listers results in his own hospital experience

as described by himself, have been, that was in the midst of abominations too shocking to be mentioned; and in the neighborhood of wards where death was rampant from pyaemia, erysipelas and hospital gangrene, he was able to keep his patients absolutely free from these terrible scourges.

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